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ABSTRACT

The Ideal Design of Effective and Logical Systems (IDEALS) project is a program based on the concept of a five-part methodology for designing educational systems. The objectives of the IDEALS concept are to train educational decision makers to use and train others to use IDEALS, and to produce materials and procedures which will permit others to implement similar programs in educational organizations. Participants in Project IDEALS followed a seven-phase program consisting of a) program development, b) training, c) first interim, d) first follow-up,e) second interim, f) second follow-up, and g) results, analyses, and reporting. Next, a data base, results, and conclusions were derived from the seven-phase evaluation program. Finally, an instructional package was developed, based on feedback from the participants, which further explains concepts, defines technical explanations, and gives examples and exercises to ensure understanding of the concepts. Most participants found IDEALS useful in producing various products and procedures, including the individualization of instruction, a university registration system, and in-service teaching. (Extensive tables, graphs, and appendixes are included.) (Author/PD)

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Part A - Introduction to Report

I PROJECT OBJECTIVES

The purposes of this project are: (1) to prepare educational professionals for the role of utilizing the IDEALS (Ideal Design of Effective And Logical Systems) Concept in educational curriculum and program development, (2) to educate professionals involved to the point where they can educate others in their own organizations to carry out the ideas, and (3) to produce materials and procedures which will permit others to implement similar programs in educational organizations.

The first objective is the selected function level from the following purpose hierarchy for the:

Training Educational
R&D Personnel System

Provide systems design awareness
Provide systems design learning motivation
Make people aware of the IDEALS Concept
Provide motivation to learn the IDEALS Concept
Have people learn the IDEALS Concept
Provide people with the skills of systems design
**Develop human agents for systems design (selected level)
Operate a continuing systems design and improvement program
Design educational systems
Provide organizations with operating educational systems

The second and third objectives are "boundary values" selected as output limitations on the purpose.

In order to achieve the stated objectives, a training program with several follow-ups was organized for a selected group of educational professionals. The method of organization and instruction for this training period was defined with the same concept (IDEALS) which we planned to teach the educators. From the feedback and experiences of the educational professionals as they learned the IDEALS Concept, an instructional package "*IDEALS Concept: Purpose Based Educational Planning*" was developed.

II BRIEF DESCRIPTION OF THE IDEALS CONCEPT

The IDEALS Concept has been successfully used for planning in many non-educational fields. These include the development of various business, patient care within hospitals as well as entire hospital facility planning, programs for the Wisconsin State Department of Vocational Rehabilitation, training of the personnel of STATISTICS CANADA. This project was developed because of a concern about *educational* design concepts.

This led to the following restatement of the basic philosophy with which the IDEALS Concept operates: *The way our society goes about "designing our educational system" and solving educational problems significantly affects the quality and quantity of results obtained*. The important implications of this seemingly mild statement become apparent by reviewing the definitions of the major words and phrases, starting with the most critical one, "results obtained," and working backwards to the key word, "way."

"Results obtained" refer to those goals or objectives that are both short and long term. Obviously related to an educational problem, results are identified in various terms, either individually or in combination: time for learning, human dignity, comprehension, costs, the degree of understanding, effort, utilization, equality of accessibility, cultural enhancement, quality of facilities, peaceful relations, adaptability, ability to apply, and so forth.

"Significantly affects the quality and quantity" refers to the meaningful differences that occur in the attained levels of the goals and the number of solutions found with one way compared to what is obtained with another way. That is, could the results obtained be better whenthe way of solving a problem is consciously considered and different than usual compared to the results that would be obtained whenusing only intuition of just the classical approach? Even the empirical comparisons available thus far indicate that the answer is a resounding "Yes." [1,2,3]

"Problems" refer to the perceived need and the intention of motivating action in seeking the goals and objectives mentioned as the desired result. For example, the problem may be high cost, degradation of human dignity, or lack of learning, underutilization of resources, low quality levels, inability to perceive conceptual relationships, or insufficient numbers of satisfactory conditions. In addition, other terms describe problems: conflicts, systems, arguments, needs, or wants. And, of course, substantive areas of difficulty are involved: specific courses, a whole curriculum, district-wide planning, facility development, business procedures, and so forth.

"Solving" includes designing, defining, explaining, resolving, deciding, clarifying, planning, proving, and otherwise developing an answer. One of these words is usually matched with one of the words describing "problems," thus fitting the basic premise to the situation. Instead of "solving education problems", the premise could read, "designing its system," "resolving its conflicts," "providing its education," "planning its facilities," or "defining its public relations program."

"Society" can be interpreted to include any political entity: a state, region, city, country, community, neighborhood, or town. Just as important is the fact that any size grouping of people or organization can be substituted for this word: whole organization, department, one school building, a course, a department, a curriculum, or a professional association.

"Way" is the critical aspect, and has many synonyms: method, approach, plan-of-attack, procedure, process, modus operandi, or steps followed. "Way" will be specifically defined in terms of five major concepts:

(A) The structure of the solution or a system framework,

(B) The strategy or methodology used to identify what should be the specifications of precise conditions in the solution structure for the particular problem,

(C) The role of people in following the strategy to specify the specifications in the solution structure,

(D) The continuing program of finding new solutions and improving old ones, and

(E) The models and techniques for abstracting and specifying solutions.

Thus the basic premise of the philosophy of the project can be restated. "The solution structure used, the strategy followed, the role established for people, the continuing change philosophy adopted, and the models applied by society in designing educational systems and solving educational problems significantly affect the quality and quantity of results obtained."

But even more important is the availability of proven concepts that foster the action needed to obtain the solutions education seeks. Focusing on the "way" is the key, for the process and thinking modes are critical: What is a prescriptive, universal, and understandable framework for any solution? What is an innovative and effective resource utilization strategy or step-by-step approach? How can any type of people at any level with any education utilize the strategy and the structure? What is a positive organizational program that fosters the idea of continuing change? How can models be appropriately used rather than serve as the focus of the project?

The whole concept that has emerged to describe these five parts of the "way" is considered a theory of design. The specific name used for this proposal is the IDEALS Concept (Ideal Design of Effective And Logical Systems.)[4,5] Each of the five parts will be explained to show its relevance in educational systems design.

(A) A definition of the word "system" which is prescriptive, universally applicable (to a curriculum course, session in a course, program, library, or any other small or large educational unit or procedure in an educational setting), and understandable provides the structure of a solution. Eight elements and five dimensions of each element form the basis for this definition. In addition, the ability to handle the complexities among various sizes and types of educational components is greatly enhanced by the matrix form of this definition.

The eight elements are defined as follows: (1) Purpose-The mission, aim, results sought, or primary concern of the system. (2) Inputs-Any physical items, information, and/or human beings, combination of any, or feedback of previous outputs, entering the system to be converted into one or more outputs. (3) Outputs-The physical items, human beings, information items, and/or services that result form the processing of inputs. Purpose tells what is to be accomplished, and an output is each item or service which contributes or is related (even scrap and trash) to the total accomplishment of the purpose.

(4) Sequence-The process, algorithm, or transformation required to change the inputs into the outputs. Sequence is the word used for the conversion process. (5) Environment-The physical and sociological setting within which all the other system elements take place. Physical factors include noise, temperature, humidity, dirt, color and light, while sociological factors include the attitudes and morale of the teachers and principals, community perspectives and mores, operating controls and rules, legal and governmental regulations, and the organizational structure and management style within which the people operate. (6) Physical Catalysts-Physical resources that aid in each step of the sequence for changing the inputs into the outputs but do not become part of the output. These include visual aid equipment, chairs, computers, filing cabinets, building, chalk, and desks. (7) Human Agents-Human resources that aid in each step of the sequence for changing the inputs into the outputs but do not become part of the output. (8) Information Catalysts-Information resources that aid in each step of the sequence for changing inputs into the outputs but do not become part of the output (projector operating manual, library reference books, etc.).

Design of a system is accomplished by the multidimensional specification of the precise conditions for each system element. The five dimensions are defined as follows: (1) Fundamental dimension is the form in which the elements manifest themselves, or the tangible, overt, or real-life size, shape, composition, format, modality, appearance, strength or property, or other manner of existence. Some illustrations are the procedure for determining priorities (sequence), computer acquisition schedule (physical catalysts), and report format (output). More than one fundamental dimension per system element may be needed. The fundamental dimensions should be specified before one can design rate, control, interface, or state dimensions. (2) Rate dimension is one or more measurements of the fundamental dimensions of the element, usually on a per time unit basis. Rate refers to frequency and intensity, and is therefore the quantitative, tool, utilization, or measurement dimension. Measurable goals and objectives are also included. (3) Control dimension is the way one or more of the fundamental and rate dimensions are to be (a) measured as the system operates, (b) compared to desired specifications and confidence limits, and (c) corrected if necessary to maintain the desired specifications. (4) Interface Dimension concerns one or more relationships for each element with other systems or other elements in the system under consideration. (5) State dimension is chronologically-based scale, learning stage, growth, or decay of the other four dimensions of a system element. The state or future dimension concerns anticipated system element changes in short or long term periods. It concerns the planned or designed-in (or obsolescence) changes desired in time, and the methods (transformation structure) of arriving at the desired changes.

(B) An effective design or planning strategy applicable to present and contemplated educational systems for the purpose of formulating the most effective system for achieving necessary functions should be different than the conventional strategy based on doing research. This strategy differs significantly from the research strategy, and has been applied widely in several educational settings, such as development of curricula in university departments, design of a new college, and development of specific courses. It shows how available technology is appropriately utilized as needed rather than being applied on a random or intuitive basis.

Research has a well-founded approach or methodology. This is not the case for design. When a step-by-step approach for design is taught, the research methodology is generally given. This, in effect, assumes that the same approach is desirable for both purposes.

In the briefest format, the research approach has the steps of observation and/or library search, hypothesis, experimentation (or more observation), and conclusion. This plan of attach has analysis as its hallmark and pieces of the phenomenon of interest as its focus. As valuable and necessary as initial analysis is for research, its place and emphasis in design should be questioned.

The conventional design approach, when made explicit, is almost identical: (a) identify the problem for which a single system, product, or piece of equipment is required; (b) subdivide the problem into its component parts; (c) analyze the components to uncover any new elements of the problem which would change the design specifications; (d) recombine the components into the desired system, product, or equipment.

The steps vary only slightly in books on usual design professions, in new "design" or solution-oriented fields like operations research, management science, and systems engineering and design, among the advocates of creativity training, among groups of practicing designers, and among almost any industrial personnel concerned with "designing" a specific answer or solution for a specific problem.

What is surprising about this sameness in the research and the design methodologies is that, while their purposes are different, the two approaches have been treated as one! This is a situation which is unacceptable if we recall the ideas of the philosophers (induction or research is different than deduction or conversion-to-practice), psychologists (purpose orientation is health-mindness, detailing and subdividing sick-mindedness), and even the architects (form follows function).

Using the research approach for design involves several explicit as well as implicit assumptions, all of which are shortcomings of using the research approach for design.

In the first place, subdividing and analyzing, which is so essential for research, implies already-existing phenomena to be analyzed. This restricts the vision of the designer. The designer seeks purposeful and functional action through new and different combinations of phenomena. The forced "learn what's happening" approach even causes the designer of a new and presently nonexisting system or product to turn to other companies or systems, to dig into what they are doing. C. I. Gragg has suggested that this approach "dangerously distorts the questioner's point of view so that it seriously hampers his thought processes." And J. Esherick has written: "Is it possible that, in concentrating on analysis, we are avoiding the really critical issues in design?"[6]

Second, the research approach focuses on components rather than on wholeness. Attention to components is essential in research, but in design it very often leads to suboptimization for the entire solution. Focusing attention on the slide projector for education in a classroom led to a well-utilized machine, but ignored the functions that needed to be achieved in that grade.

Third, the subdivision emphasis leads to an overemphasis on techniques to separate the whole into constituent parts or elements. This can lead the designer to seek opportunities to apply the techniques rather than to seek an optimum design for a particular problem. The disadvantage is significant: "Systematic techniques, just because they need to operate on known units, usually beg the real question of design and so achieve little more than a second rate designer does."[8]

Fourth, the emphasis on analytical tools creates a gulf between those people in an organization who possess the technical expertise to handle the tools and the majority who do not. The designer or engineer may feel that the others cannot possible comprehend the elegance and sophistication of the tools and thus can contribute little or nothing to any design solution. This leads to neglect of the potential contributions of these other people, who are then considered resistant to the idea which do get developed.

Several designers have suggested a design approach that is different than the research approach. "The first step ... is essentially invention (conceive . . . a scheme, or an idea...); the second is essentially analysis (. . .to insure that the idea can be made to solve the problem). . .; the third . . . is the translation of the solution from analysis into an actual (system)"[7]

Encouraging signs that such a design approach can be successful come from the experiences of several organizations. Although the IDEALS Concept approach was developed primarily for designing management systems, it has been found similarly useful in many other projects. It has also been used by many different people with a wide variety of educational experience and background (engineers, teachers, managers, workers, accountants, nurses, janitors, presidents, etc.) for all levels of systems that occur (product design, production control, manufacturing processes, information flow in an office, individual job at one work station, etc.) [4,5]

Ten steps are used in the originally stated IDEALS Concept design strategy:

(1) Function determination. The mission or purpose of the system and of the higher level systems of which the project system is a part, are identified in a hierarchy as a means of selecting the highest level function. Boundary values in terms of the other eight system elements are also expanded to provide the largest solution space within which to design the system.

(2) Ideal system development. Many high level and advanced systems are developed based on the regularity concept, i.e., an ideal system is designed to achieve the selected function only for those conditions of the boundary values which occur most frequently or regularly. One of them is selected to serve as a guide for developing a recommended solution, thus serving as a feasible ideal system target (FIST) for later design steps and decisions needed when the recommended system is implemented and operating. These ideal systems are actually designed--not just discussed in the abstract.

(3) Information gathering. The process of selecting the FIST raises many questions related to the design of a system, its manner of implementation, basic organizational data, and so forth. This step gathers only this kind of information, not everything, nor does it only bring together information about what is now going on, as is done in the analysis step of the research approach. Only the precise information which is required is gathered. Experience has shown this information to be far more pertinent and the amount far less than that typically gathered in the research approach used for design.

(4) Alternative systems suggestions. The information gathered will show that some of the components of the FIST will not be feasible as designed. Thus, alternatives need to be developed which will conform as closely as possible to the FIST.

(5) Select the feasible solution. Basic evaluation factors, such as economic, hazard, control, psychological, and organzational factors, are used to select the recommended system or solution.

(6) Formulate the system or solution. The exact details of the solution are prescribed in this step. All of the design parameters must be precisely specified in their multidimensional form. The selected function and the FIST always serve as guides in all decision-making regarding the workability of any solution.

(7) Review the system design. Other persons as well as the designer need to reexamine the system design to: avoid premature installation, correct details, and determine if it is at all possible to move closer to the FIST.

(8) Test the system design. Because a few components of the recommended system require verification in real life, the test step is used.

(9) Install the system or solution. The changes or new items must be ordered, people must be trained, and shakedown or debugging and evaluation activities must be arranged.

(10) Performance measures established. A measurement is made to determine how well the objective of the project has been met, and to establish the operating expectations of the system or solution. This step in effect analyzes the new system to arrive at a "generalization" that serves as a predicator of and a control for the system.

This design approach is an iterative process. The division line between each step is not sharp and clear. So the parts of a project may require movement forward to later steps, while retrogression to former steps may also be required.

(C) System design projects must involve all the concerned people in an organization in a positive participatory framework. Whereas subdivision and knowing what is happening now in a conventional strategy tends to foster defensiveness among people, the design strategy in this theory focuses on functions and targets to bring people together. Workshop groups, project teams, and program planning are phrases that describe some of the people-involved program concepts in this part. In addition, the program ideas regarding people involvement at all levels show how a continued effort of education systems design and improvement can be established in an organization.

(D) Continuing programs of education system design and improvement must be established. This need stems from several theoretical and practical considerations. (1) Intellectual acceptance of a systems concept in any organizational unit of education does not constitute implementation. A planned betterment program for improving satisfactory existing systems, for example, needs a programmed structure to become practical. (2) Each system project--regardless of the size of the system, from one man on a job to the whole education establishment--involves social change which needs to be designed as well as the system itself. Relevant client groups and communication behavior are ideas which structure the technology behind the design of a social change that always accompanies an actual system design. (3) A synergetic effect (a broad generalized program is greater than the sum of its parts) should be expected when all systems in an organizational unit are systematically reviewed. (4) A program for continual design and improvement of systems to achieve organizational purposes and goals requires a firm commitment of resources. Although individual efforts are successful and productive on occasion, their encouragement within a total program provides still greater results of productivity and manpower development.

(E) Models for design and evaluation. Many techniques are available to aid in abstracting the precise specifications for a specific situation. Symbolic charts,flow diagrams, simulation, human factors, decision theory, control charts, and measurement theory are just some of the models which could be useful in specific design projects. In actuality, the number of such models is very large, and can be arranged in terms of which ones appear best suited to abstract each dimension of each element 4 . Although a significant part of the theory of design, models are introduced if they are immediately useful to the participants in system design and only to supplement those that most of the attendees already know.

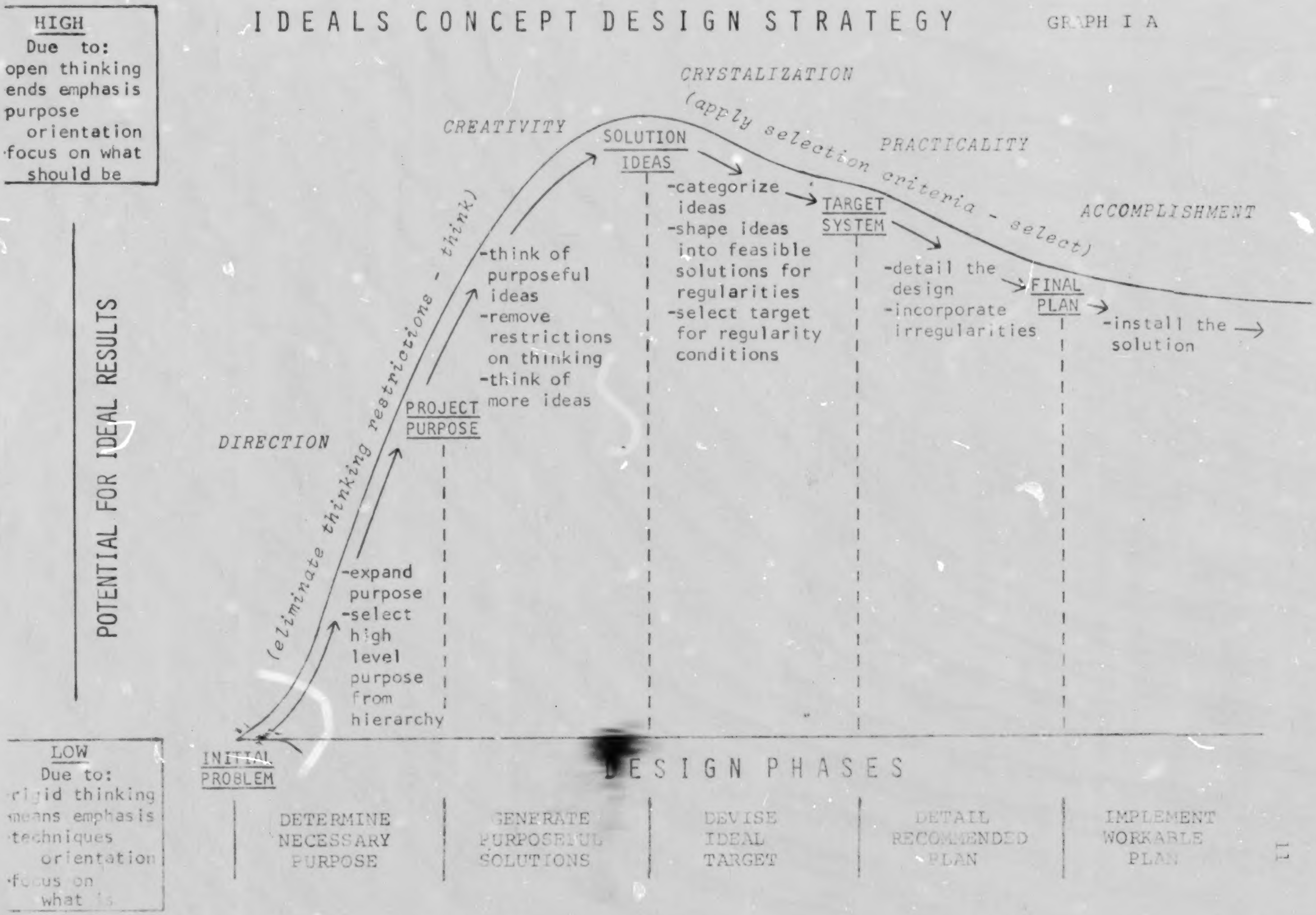
As the project progressed, several changes were made in the structure of the concept detailed above. Some changes dealt with sematics; words were redefined or replaced with other terms for a higher level of comprehension. Other changes were made to simplify the 10-step procedure, from which a five-phase strategy emerged.

These changes take this operational shape in describing the parts of the IDEALS Concept for this project: (1) A five phase strategy which focuses on what should be the purpose and on a feasible ideal system target (FIST) for achieving the purpose, from which the final plan can be developed, (2) a framework or solution grid for the plan which virtually assures that all aspects of the real-life situation will be considered, and (3) a design and improvement program that structures involvement of people in all parts of an organization toward continuing change.

Graph IA illustrates the resultant five phase design strategy with the IDEALS Concept. Specifically, the purposes of Phase I (Determine Necessary Purpose) are (a) to give a direction to the planning by specifying the specific purpose to be achieved, and (b) to begin the process of generating creative solutions. Given this start, the purpose of Phase II

IDEALS CONCEPT DESIGN STRATEGY

GRAPH I A


HIGH
Due to:
open thinking
ends emphasis
purpose
orientation
focus on what
should be
POTENTIAL FOR IDEAL RESULTS
LOW
Due to:
rigid thinking
means emphasis
techniques
orientation
focus on
what is
DIRECTION
CREATIVITY
CRYSTALIZATION
PRACTICALITY
ACCOMPLISHMENT
(eliminate thinking restrictions - think)
(apply selection criteria - select)
INITIAL PROBLEM
-expand purpose
-select high level purpose from hierarchy
PROJECT PURPOSE
-think of purposeful ideas
-remove restrictions on thinking
-think of more ideas
SOLUTION IDEAS
-categorize ideas
-shape ideas into feasible solutions for regularities
-select target for regularity conditions
TARGET SYSTEM
-detail the design
-incorporate irregularities
FINAL PLAN
-install the solution
DESIGN PHASES
DETERMINE NECESSARY PURPOSE
GENERATE PURPOSEFUL SOLUTIONS
DEVISE IDEAL TARGET
DETAIL RECOMMENDED PLAN
IMPLEMENT WORKABLE PLAN

(Alternate Purposeful Solutions) is to creatively think of many ideal solutions to achieve the selected purpose. The Purpose of Phase III (Devise IDEAL Target) is to shape the ideas generated in the previous phases into a feasible ideal system target for the most important or regular conditions. The result of this phase is a target system which will be used as a guide for detailing the final design. The first purpose of Phase IV (Detail Recommended Plan) is to incorporate into the target system accomodations for the exceptions and irregularities that keep as much as possible of the good developed for the regularities. A second purpose is to detail the design using the solution framework, Table IA. The purpose of the final phase, Phase V (Implement Workable Plan) is to install and operate the system designed thereby achieving the purpose selected in Phase I.

The second part of the IDEALS Concept, the solution framework or grid, remains an integral part to aid the design team in considering all aspects of the situation.

The third part, involvement of all personnel in projects and in an organized program of continuous change, is very necessarily emphasized.

III Examples of Typical Designs Resulting from this Project

During the training session, its follow-ups, and interviews, the educational professionals begain to use the IDEALS Concept to design solutions which would be of use within their own situation. Typical designs covered a wide range of subject matter. Four projects emphasize the diversity of areas of applications of the IDEALS Concept:

1. Margaret Norton, English teacher, Riverside, California
The IDEALS Concept for individualizing instruction of junior high students

2. Dr. Frank Whittacre, Chairman of the Department of Education, University of Tennessee
Design of a Student Advising System

3. Dr. Myron Swanson, Professor of Philosophy at Bemidji State College, Bemidji, Minnesota
Incidental Experiences and Comments

4. Dr. James C. McDonald, Superintendent of Schools, Vista, California
Incidental Experiences

Margaret Norton, English teacher, Riverside, California.
THE IDEALS CONCEPT FOR INDIVIDUALIZING INSTRUCTION

As a Language Arts teacher, my purpose was to have students design their own study programs. I have 108 junior

(Table IA SOLUTION FRAMEWORK)

DIMENSIONS

ELEMENTS

	FUNDAMENTAL basic characteristics -what, how, where or who	RATE performance measures, goals	CONTROL evaluation modification, operation	INTERFACE relation to other systems or elements	FUTURE STATE anticipated changes
PURPOSE mission, aim, need, primary concern					
INPUTS that which is processed within the sequence					
OUTPUTS desired (achieves purpose) and undesired results					
SEQUENCE steps for processing inputs into outputs					
ENVIRONMENT physical and attitudinal aspects of the system					
PHYSICAL CATALYSTS equipment, facilities, etc.					
HUMAN AGENTS personnel					
INFORMATION CATALYSTS books, directions, etc.					

CATALYSTS & AGENTS aids processing inputs into outputs without becoming part of the outputs high students, ages 12, 13 and 14. The school in which I teach is integrated to the same proportions as the community, so the students vary in ethnic background -- 10% Black, 10% Mexican-Americans, and the rest are Anglo. I have kids in my classes with reading abilities ranging from 2nd to 12th grade levels.

I had been working with the Social Studies teacher and I began to concentrate on three classes where the students were back-to-back in my English classes and his Social Studies classes. He was doing a unit in history on exploration and the colonial period so in my classes we read Light in the Forest by Conrad Richter. I planned for this particular unit myself using the IDEALS Concept. Table IB shows the hierarchy of purposes which I developed. The star indicates the purpose which I selected as my aim. (Table IC gives the final specifications of Margaret's study plan which she developed based on her selected purpose.)

As part of the sequence of the Light in the Forest Study Plan, students were to turn in work that they had developed from their own planning of what follow-up reading to perform. This gave the students some structured practice in making decisions about what they wanted to do in class. I also worked with my Light in the Forest plan with the classes, analyzing the purposes, my purpose hierarchy, and the sequence we had been using; this gave them some background as to how this kind of thinking (the IDEALS Concept) could be used in working with a unit in Language Arts.

Students Develop Their Own Systems

As the second quarter of the first school semester began, we moved in the direction of students developing their own systems. The Social Studies classes had moved into the area of studying the Revolutionary War period, so the English classes begain to read Johnny Tremain by Esther Forbes. The first step was the introduction of the book to the class and the beginning of the reading process.

The second step was to give each student a structure within which to work in making her/his own plan. Each student obtained three sheets (shown in Tables ID, IE, and IF) as soon as her/his reading was finished or nearly finished. (On the actual sheets, space was provided for the student to work out their own answers.) I pointed out that as soon as they had finished Johnny Tremain they were going to be designing what they wanted to do with it. I also pointed out that, where in Light in the Forest I had chosen the direction that the class would move (using the purpose expansion), and from what point of view (including literary, cultural and character points of view), this time they would have to determine the direction in which their study program would move themselves. I pointed out that there are, in any kind of literature, a multitude

Table IB Hierarchy Of Purposes
for Light in the Forest Study Plan

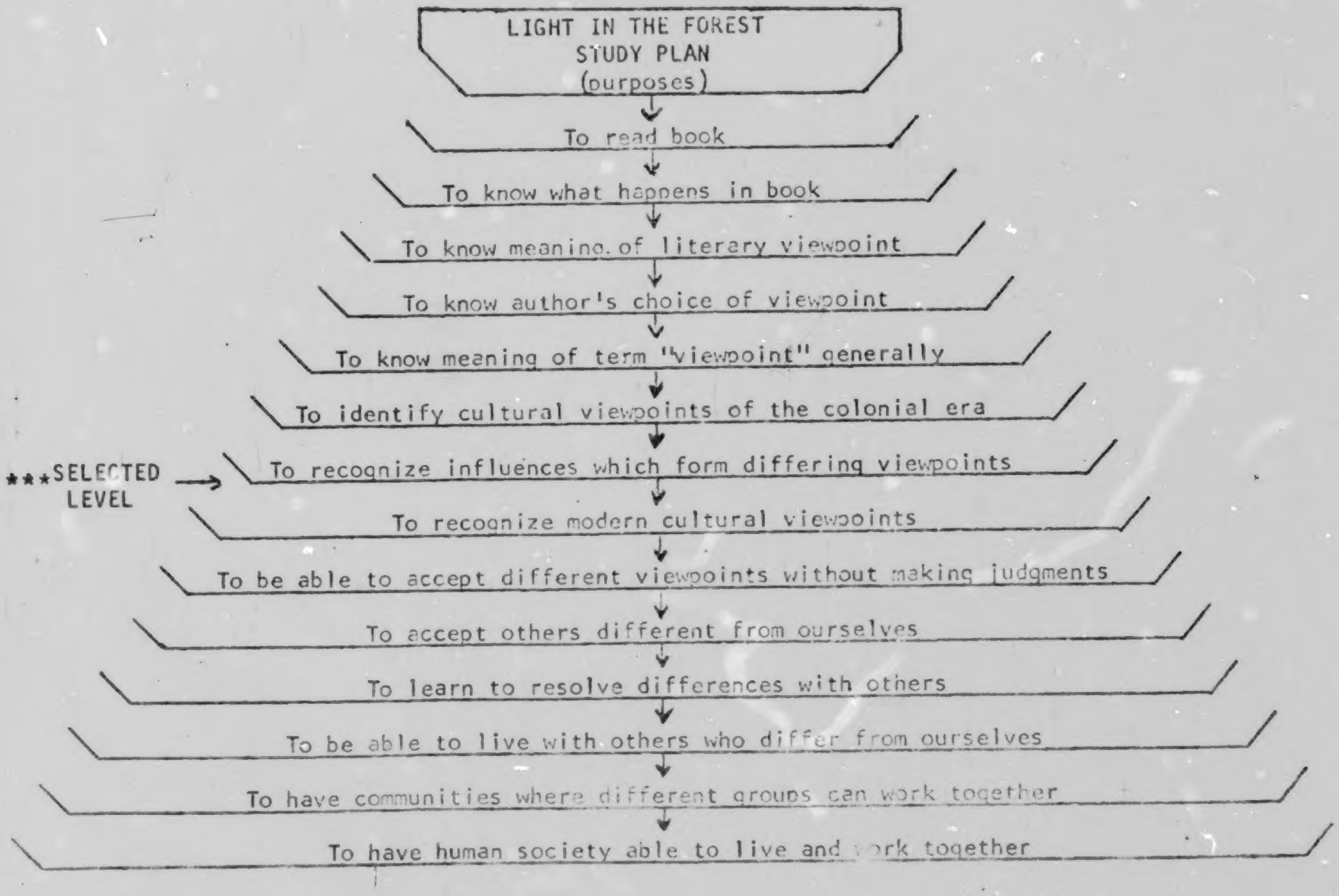

LIGHT IN THE FOREST STUDY PLAN (purposes)
To read book
To know what happens in book
To know meaning of literary viewpoint
To know author's choice of viewpoint
To know meaning of term "viewpoint" generally
To identify cultural viewpoints of the colonial era
***SELECTED LEVEL
To recognize influences which form differing viewpoints
To recognize modern cultural viewpoints
To be able to accept different viewpoints without making judgments
To accept others different from ourselves
To learn to resolve differences with others
To be able to live with others who differ from ourselves
To have communities where different groups can work together
To have human society able to live and work together

Table IC Details of *Light in the Forest* Study Plan

Purpose: To have students recognize influences which form differing viewpoints.

Inputs: Students in Language Arts Classes; Information

Outputs: Students recognizing influences that form differing viewpoints; group and individual reports and projects.

Sequence:
1. Introduce book; students begin reading.
2. Worksheet contrasting points of view of two characters.
3. Students read (this continues throughout).
4. Overhead lesson on literary point of view.
5. Small group work in writing from a particular point of view.
6. Students choose second book to read on Indian life or the colonial period.
7. Lesson on simile and metaphor.
8. Worksheet on reasons for character points of view.
9. Vocabulary list for first half of book.
10. Lesson on symbolism
11. Reading of "The Massacre at Wounded Knee."
12. Vocabulary quiz; vocabulary list for second half of book distributed.
13. Several days of small group work role-playing points of view.
14. Discuss influence of point of view in the book.
15. Second vocabulary quiz.
16. Introduction to difference between biography and historical fiction based on the biography of Blue Jacket.
17. Students choose from 68 ways to present a "book report" and turn in work contracts.
18. Students finish reading second book and prepare report.
19. Final test (open book and take home).
20. Students make final presentations of reports.

Environment: Primarily Central Jr. H. S. Campus, City and branch libraries, and student homes but open to any others as needed.

Physical Catalysts: Primarily classrooms, paper, pencils, overhead projector, tables, chairs, etc. but including any others as necessary.

Human Agents: Primarily Mrs. Norton, Mr. Leichtenberg, teacher aides, librarians, parents, other students, etc. but open to any others as needed.

Information Catalysts: Data about Pyramid Lake and Wounded Knee massacre; lists of books available to read; verbal or written annotations of various books; IDEALS Concept; background information on various Indian tribes; and others as needed.

Table ID

Question to be answered for determining possible purposes of Johnny Tremain Study Plan

Worksheet I.

List as many possible purposes for studying Johnny Tremain as you can. (20-3-)

Examples:
- To read the whole book
- To know what happens in the story
- To know the main characters
- To learn about colonial life
- etc.

Table IE

Questions to be answered in constructing a purpose hierarchy for the Johnny Tremain Study plan

Worksheet II.

Work out a purpose hierarchy. List on the first line the most immediate unique purpose (given). On each succeeding line list a higher or broader purpose. Ask yourself either or both of these questions: "Do this in order to do what?" or "What is the purpose of this purpose?".

Examples: What is the purpose of reading the book? To know what happens in the book.

Know what happens in the book in order to do what? In order to know Johnny Tremain as a literary character.

(Note: these questions were followed by a blank purpose expansion ladder such as is shown in Figure 1.)

Put a * by the purpose level that you think you will plan for.

Table IF

Questions to be answered for specifying the details of the *Johnny Tremain* Study Plan.

Worksheet III.

By answering the following questions you should be able to plan a course of study for this unit that will achieve the purpose you have chosen.

1. What is your purpose in studying *Johnny Tremain*? (Write here the purpose you put a * by on Worksheet II)
2. What are you doing this to, in, or on?
3. What is the end result or what will the end result look like?
4. What steps are to be followed to get to the end result?
5. Where and under what conditions is this being done?
6. What equipment and physical facilities will be used?
7. Who will help you to do this and how?
8. What information will be needed to keep you plan operating properly?

of ways in which they could study it, and that they could each write a purpose hierarchy for their point of view (see Table IE)- character development, theme, historical background or any of these kinds of things.

As soon as they had finished reading the book, they started their planning. They first went through listing possible purposes and working out a purpose hierarchy (see Table ID and IE). They usually redid this several times. Table IG is a partial list of functions for which the students chose to design their study plans. Using the questions shown in Table IF, they filled in their system designs for the purposes that they had chosen and went to work.

It took most of the students the four weeks starting the quarter (until the time of the Christmas vacation) to complete their reading and to get their study plans worked out. S[illegible] students had completed their planning, implemented their sy[illegible], and handed in an end product in this four week period. [illegible]ese students were given freedom to design another system within the language arts area and to implement this one also before the end of the nine-week quarter. What they usually did was to grab the second worksheet (Table IE) and relabel it, fill in a new purpose hierarchy, complete their new study plan with Worksheet III (Table IF), and proceed to implement their second system. Other students completed and implemented their Johnny Tremain studies in the nine-week period but did not have a chance to do any other plan. Now it's not all perfect; nothing that I do is. Out of 108 students involved in this planning, two students didn't read the book; two others just finished the book and did no planning. There were a few students that planned and didn't implement; but some of these are still so interested that they want to go ahead and finish their systems and turn in whatever they were going to do.

As a whole though, the students did show a great deal of initiative as they implemented their systems. This was partly because of the feeling they had that they were doing it themselves. I will mention briefly a few interesting things that happened as the students completed the work on their plans.

Two girls seeking background material as they composed a skit on the Tory point-of-view read Shaw's The Devil's Disciple. One girl working on the history of printing called the city newspaper, The Riverside Press, and arranged for a speaker to talk on how the city newspaper is now being printed. She cleared dates with me and made all arrangements herself.

Another girl prepared overhead transparencies on events leading up to the outbreak of the Revolutionary War and gave a presentation during an entire class period. The Social Studies teacher said when he saw her work that he wondered

Table IG Student Study Plan Purposes

To learn how Johnny Tremain develops from childhood to maturity

To know about colonial silversmithing

To know about the English taxes and their effects

To know how the Revolutionary War affects us today

To understand how an author shows character

To learn about the events which helped start the Revolutionary War

To learn about the occupations of colonial days

To trace the history of printing

To know about Paul Revere

To know the Tory point-of-view

To learn about secret organizations

To trace the history of the Whigs and Tories

To know about witchcraft in colonial days

etc.

why she was doing all of this work now in English when she had done so little in Social Studies. I believe that her work developed in this manner because she was trying to achieve the purpose that she had specified in her own plan.

Other interesting things happened as students who had completed work on their Johnny Tremain Study Plans turned to other things. One student wrote a system for a one day teaching unit on poetry. She chose a poem by e.e. cummings and two others written by another student and herself as the basic material for this lesson. She prepared overhead transparencies to use in her presentation. Several students, somewhat to my surprise, wrote plans for systems of vocabulary development.

At the end of the quarter in which this work was done with three classes, the school went into an extensive rescheduling program. Most of the students that I had been working with stayed with me but they were assigned to different periods. This process caused some confusion and difficulty. However, one real advantage soon appeared. Some students who had worked with IDEALS planning during the second quarter of work (Johnny Tremain) were now in classes with students who had never really tried to become involved in planning their own study. A great deal of peer instruction took place as those with experience hlped those without.

The third quarter of work was devoted to a unit on mystery fiction. Students read widely from an assortment of mystery books ranging in reading difficulty from second grade level (Silver Dollar Mystery) to adult (Poe, Doyle, Christie, Armstrong, etc.).

One important change was made in the planning sheets given to the students this time. I added a column for rate in my original matrix (see Table III.) Students were asked to tell how many, how much, how well, or when the items listed in the first column would be worked on, learned, finished, etc. This gave them some difficulty but also some help in being specific about times and amounts. It also gave them a place to put the statement, "I'd like to get an A on this project." As I pointed out, the grade would be an indication of how successfully they had achieved the purpose of their plan.

While the students were planning their work for the unit and reading selected books, my role was to help with planning and to present important concepts to the class in connection with the study of mystery fiction. Work was done in small groups using clues to mysteries in order to help students learn to work with each other in groups.

As the students completed reading and planning, a variety of activities arose. Some students elected to write their own mystery stories and became involved in careful plotting

Table IH Extension of Worksheet III (figure 1-5) to include rate and control dimension

CONTEMPORARY LIFE STUDY UNIT	FUNDAMENTAL	RATE	CONTROL
1. Purpose:			
2. Input:			
3. Output: 1. 2.			
4. Sequence: List the steps to be followed in your plan to achieve your purpose. List in order and in detail.			
5. Environment: (What are the physical and psychological surroundings where you carry out plan?)			
6. Physical Catalysts: (What are tools, objects used in plan? They do not change.)			
7. Human Agents: (Who will help you carry out your plan? Teachers? Aides? Others?)			
8. Information Catalysts: (What must you find out to make the plan work? A telephone number? Speaker's name? Whether certain materials are available, etc.?)			
		For RATE tell how many, how much, when items in column 1 will be worked on, learned, finished, etc.	For CONTROL tell how you are judging progress and success of what you are doing and what changes you make to make your plan work as you want.

and character development. Many of them spent a lot of time discussing with members of their groups what motives should be used and why people act the way they do. Some of them finally searched for simple books on psychology to broaden their knowledge of human behavior.

Others made in-depth studies of Poe and Doyle. They chose to present what they had learned in a variety of ways--from a formal, footnoted research paper to oral presentations to casting, rehearsing, and presenting a play based on Sherlock Holmes background. Others chose to make comparative studies of kinds of mysteries or of different books by the same author.

One real benefit of this kind of planning was that many students read far more than they would have in a standard classroom situation. Some put in their plans, "Read two books," "Read a book every week," "Read twelve stories." Many of them would have been unhappy if I had assigned that much reading but did it gladly on their own. I had made the reading of one book a minimum restriction on the students' plans.

Having observed a problem, in not having a time line with a date when plans should be completed, I corrected it as we began work on a different unit during the fourth and last quarter of the school year. Plans were due in on a Friday after two weeks of introduction to the unit and time to do the planning. Implementation of the plan was due to start on the following Monday. This worked much better. A constraint on the plan was the five weeks beginning the Monday after they had turned in their plans. For this quarter I added the third column of control to the students' planning. I identified this column for them with the direction, "For CONTROL tell how you are judging the progress and success of what you are doing and what changes you make to have the plan work the way you want it to." (see Table IH for form students used.) I also added a sheet labeled "CONTROL DIMENSION REPORT" that students turned in at the end of each of the first four weeks of work. The fifth week, the projects were due. On this sheet I had three questions for students to answer as follows:

> What did you say you would get done this week?
> What did you do this week?
> What changes do you need to make to keep on target
> to finish work as planned?

Two good results were achieved by use of this CONTROL DIMENSION REPORT SHEET. One was that students themselves became aware of how they were doing and began to get work done ahead instead of leaving it all to the last minute. The second positive result was that students had a success experience by being able to say, "No changes necessary. I did everything I said I would do. I'm on target." This feeling of success extended to all students no matter what level of ability since those students with some difficulty in learning had not set functions as ambitious as had the more academically minded students. The sequences also tended to differ widely between students of varying ability.

A third result occurred which I have not yet decided whether it was a positive or negative learning experience. On the CONTROL REPORT some students would say, "I planned to read one book this week. I finished only part of it. I will have to cut down on how many books I said I would read." Others made other similar alterations in number of newspaper clippings they would collect, short reports they would do, etc. On the positive side, the students did have to make a self-evaluation and put down in black and white that they were going to do a lesser amount of work. It also allowed adjustment for those who really had attempted more than they could comfortably handle. It helped alleviate some pressures on some of the students to feel that they had some control over what they were doing. On the negative side, I felt that a few students considered it an alibi for not doing much

A second restriction on the students' this last quarter was the assigned reading of the book, DIG U.S.A., and a few simple assignments in connection with the reading. From the reading in this book students were then able to pick certain areas to study and explore more intensively. Many chose drugs as their topic. By doing their own planning they did things that would have been rejected if the activities had been forced upon them. They checked out audio-visual materials from the district library using the teacher's catalog and filling out the request forms (a good learning experience in language arts). They ran and re-ran the materials mostly in small groups. They checked out the teacher's guide with material to take home for further study. They arranged for the showing of some of the material to the class. They contacted all the drug agencies in the area. They arranged several displays of various kinds. They composed, produced, gave and evaluated a survey on drug use among the students of the entire school. They conducted personal interviews not only with students but also with adults of a wide range of ages and backgrounds.

The activities for the students working in this are only examples of the many things that occurred in all of the areas. One student using the topic politics wrote letters (another good language arts experience) to many political figures asking such well-thought out questions that she got long replies from many of them. She called up and arranged to interview the mayor and the city manager of Riverside and taped the interview. Again her questions brought forth some interesting replies.

I cannot detail all of the different activities the students engaged in during this study unit. A few others were making arrangements to have guest speakers, a scientific experiment done in class, the planning and production of 8 millimeter films, visits to the court house for the county, the police station, drug centers, etc., visits to convalescent homes for the aged, preparation of materials for the bulletin boards in the classroom, making of various tapes, taped interviews of various kinds, etc. I had, of course, asked the question as they did their planning, "Is writing a report the best possible way to learn what you want to learn?" One girl planned and carried out the reading of five books each week. The group that had visited the homes for the aged went on to prepare the floor plan for a home they felt would be "ideal."

The Teacher's Role

My role, as the students really got going on this work, fell into two main areas. First I kept various possibilities in front of the group as they began their thinking about what they were going to plan. For instance, I presented an overhead lesson on the sources of biography and the distinction between primary and secondary source material.

One time I played Stan Freberg's satirical record "Stan Freberg Presents the United States of America." After class discussion of satire one group of students wrote their study plan with the purpose of writing satire and producing a tape of their own based on historical information. The tape they produced was good for humor and incorporation of historical information. When they played it for me,however, they were the first to be self-critical and decide that they had not been truly satirical. This self-evaluation appeared to be an important product of the systems approach the students were using.

The second important aspect of my role during these nine weeks was to serve as an information source and adviser.

For example, one boy had the traumatic (but for him, beneficial) experience of having his group show him in the plan that they had made just what portion of the work had been assigned to him. Since he had done little or nothing, he found himself in the position of having to produce or else. All of this occurred with my merely acting as referee to see that the group was not too hard on the boy. I had many individual conferences with students as they were writing their study plans. The greatest difficulty came as they worked on the purpose hierarchy. I would have to ask the questions "What is the purpose of this?" and "You are doing this in order to do what?" Most students gasped a little when I looked at their purpose statement and their sequence of activities, and pointed out to them that by the time they finished their sequence they were supposed to know whatever their purpose statement had asked. None-the-less, this made sense to them and after the first shock or realization of what they were committing themselves to was over, most of them went to work with great earnestness and because they were doing their own planning, they accepted this very eagerly.

My real job in this thing, after helping them with the process, was to provide them with the information they needed. Students would make requests for material as they got into the implementing of their plans and discovered that the school library was inadequate in the area they needed. They'd hand me these little lists; "Mrs. Norton, find out about this, this, and this." And that's the way it should be,I think. They have the feeling that they're more in control of their own destiny. For the most of the students doing this design was interesting and satisfying. A few found it extremely frustrating. These few expected that I would tell them what to do. Having to plan their own work was almost threatening for them.

I, personally, found it a very busy but very exciting way of working with students. For one thing, I did not have to react to grouchy students asking, "Why do we have to read this?" They were too busy finding their own purposes to try this negative approach. The variety of responses fascinated me. Students were working in the areas of character development, theme of the book, satire, point-of-view, historical background, biography, etc. The end product were also interesting although far too many students seem to visualize the only possible end product as a written report.

Student Reactions

The following are a few random examples of learning experiences that developed because the students were using this kind of planning.

One, students began to ask as they entered the room, "Is this a work day?" meaning can we go ahead with what we have planned. If the answer was "yes" there was a sigh of relief; if "no" a groan followed.

Two, several times students came in after school to discuss the value of planning and how they could use what they had learned about planning this year as they went on into high school and college.

Three, when students were involved in the work that they had planned, they did not rush out the door to get to the cafeteria as soon as they were dismissed for lunch. On the contrary, I often had to send them on their way. Other students asked if I would return fifteen minutes before the end of the lunch hour to open the room and let them get something done that they had planned.

Four, many students asked to be transferred to my classes. They had heard from their friends that something different was going on. It reached a point where I had too many students to accept others into my classes.

Five, during a class discussion one girl said (to wide agreement within the class) "This system means we have to do the thinking. It was easier when you did the thinking for us." There was, however, no interest expressed in a return to a kind of instruction where the teacher was doing all of the planning and making the decisions.

Six, students became eager to check out books that they had discovered a need for. They also became eager to have individual help with their work.

These few samples give you some idea of the response that developed from most of the students this year. A few did not like it and did not want to have to plan their own work. One student commented to me when we were alone after school that the reason some kids didn't like the planning was because it meant they had to do something in class.

I expect to continue use of this kind of planning with students. I hope to make it even more effective as time goes on.

Reactions from Others (administrators and teachers)

I presented the IDEALS system concepts to a group of top administrators in the district, two assistant superintendents, two principals, and two supervisors and consultants. The IDEALS Concepts met with much approval. One comment was that finally students were being involved in the process. Another was that this looked like the perfect method to achieve goals that district has been working toward for a number of years; namely, the involvement of staff in planning and the focus on the purpose of educational process. Since I've worked with this, I've been so busy with the students that I've had not time to work with my department. One of the teachers in there says, "When are you going to let us in on the secret?" The same thing happened when I was meeting with an English Faculty from another junior high school, they asked, "Let us know how to do this kind of thing." One of the people down town said, "It looks like this is the answer to the kind of thing that we've been trying to do for five years."

One assistant superintendent asked if I had had better response from this system with the students. That's hard in one way for me to answer because I've always had students doing good things. In another way it's easy to answer because I think I've had more students doing good things. More students are happy about what they're doing. More students feel successful in what they're doing than I have had before. One of the boys who built a replica of an oldtime newspaper with his own stories reads at about the fourth grade level. But he read the replicas of the old Boston papers because this is what he's interested in. Another comment that I would make, is that the students were learning with this, not only subject matter but process. I have pointed out to them that they may use this process for anything that they may want to plan. They don't have to limit it to something they're doing in English. If they want to plan something else, somewhere else, they can use it. I think a lot of them are feeling that way about it."

Dr. Frank Whittacre, Chairman of the Dept. of Education, University of Tennessee

DESIGN OF A STUDENT ADVISING SYSTEM-A SUMMARY

Frank Whittacre, chairman of the Dept. of Education at the University of Tennessee was concerned about the continuing problems with their current system of advising and registration. Dr. Whittacre organized a design team consisting of members of the faculty, a student, a student representative, and himself. He recognized group involvement as an important factor in the problem solving process.

The committee defined the basic problem: "we want to develop a workable student advising and registration system for the university." The group then proposed possible purposes of the system in order to determine their main purpose in problem solving. The ideas were then listed by degree of importance. The purpose hierarchy generated is as follows:

(Table II)

System to
Advise and
Register Students

To Train Advisors

To Supply Advice to Students

To Register Students

To Educate Students

To Enable Student to Pursue Career

To Provide Necessities of Life

To Continue Existence

Following the purpose expansion, the group chose "to register students" as the purpose level to be accomplished by the design.

The committee then identified the minimum limitations that would be necessary in the design of the system and identified their regularities. The results are shown in Table IJ.

(Table IJ)

Element	Limitation	Regularities
Function	Enroll individual students	Pre-college to Senior Student in Standard Program
Inputs	Students	Confused 18-year-old freshman
Outputs	Knowledgeable students	Student with a Degree
Sequence	Freshman-Seniors-Graduates	8 semester program
Environment	Geographic area of Student's Home	50 mile radius of campus
Physical Catalyst	None	None
Human Agents	Present Faculty	Young - new Ph.D. with no experience in advising
Information Catalysts	Requirements for Degree	General Education Requirements

Using the minimum limitations and regularities as stimulators, the team proceeded to generate ideal systems and solutions that would accomplish their selected purpose.

Several of their solutions were:

1. The university will remove all restriction on students' programs except the total semester hour requirement for a degree. Without specific general education requirements and related major requirements the student will require only personnel guidance which need not be formalized.

2. The individual high schools who are feeder schools to the university will become the initial counseling centers for the university. The guidance program will focus in a prospective students senior year on the universities requirements in the areas of programs, options, etc. and thus the incoming freshman will require little help in registration.

3. Individual departments will develop programmed packages to cover all advising functions of the department and each student at time of admission will begin a sequential program of the packages appropriate to his needs.

4. An advising system where-in each faculty member will be assigned a given number of students to be responsible for advising. The students will be majors in the area of expertise of the advisor. The advisor will function in

a sequential program through-out the students tenure in the university.

5. The university will employ one full-time advisor for each 250 students enrolled who will function as a personnel advisor to the students. One part of this responsibility will be the academic advisement of his advisees.

6. A system of peer advising by advanced students in each major will be developed by making it a part of the major department program. Thru department professional clubs and organizations, a cadre of trained advisors would be developed.

7. Each student would be given a learning pill which contains the information necessary to pursue his chosen program.

Each of the potential systems was discussed and expanded for consideration. The consensus of the committee was that systems 1 thru 6 were feasible, but that the technology necessary to implement number 7 did not exist and therefore it would have to be classified as ideal.

Since all six systems were considered feasible and at this point in design, no evident barrier was apparent in the solution space chosen it was decided to utilize a decision matrix to select the basic system from which the FIST (Feasible Ideal System Target) would be developed.

The committee then focused its attention on the determination of what factors should influence the decision and in what proportion or weight should the factor be considered. The factors included cost, time, acceptance, and training (an estimate of the kinds of training would be necessary for the people that would be involved.) They also had to consider which system was going to be the best to sell to the administration. After the weights were assigned, the next step was to develop equivalent scales for each of the factors to be considered so that each would be expressed as standard scores and be interpreted in a matrix. Each system was ranked on a scale from 1 to 10 for each factor. The scores from the scales were then multiplied by the weight of the factors to produce a design matrix as shown below:

System

Criteria	W	1		2		3		4		5		6	
		Score	x W	S	x W	S	x W	S	x W	S	x W	S	x W
A. Faculty Time	2	9	18	9	18	7	14	7	14	9	18	10	20
B. Facuty Cost	2	10	20	10	20	9	18	7	14	1	2	9	18
C. Administrative Cost	2	10	20	3	6	6	12	8	16	8	16	6	12
D. Training Cost	1	10	10	2	2	3	3	9	9	9	9	7	7
E. Benefits	1	1	1	2	2	2	2	9	9	5	5	5	5
F. Student Acceptance	4	10	40	2	8	2	8	7	28	7	28	4	16
G. Admin. Acceptance	4	1	4	3	12	5	20	9	36	5	20	1	4
H. Time to Implement	2	10	20	1	2	2	4	8	16	9	18	2	4
			61		70		81		142		116		86

The results clearly indicated that the system with most promise in relation to the criteria considered would be a faculty advisory system (#4).

Accepting the faculty advising systems as the feasible system with best potential, the committee then began the development of a FIST for this system.

The basic components of the system were entered on a solution specification matrix, Table IK in order to consider all aspects of the system. The FIST was developed within then minimum limitations determined earlier.

Detailing the elements of the FIST in several group sessions led to:

1. Purpose - Individual students will be assigned to an advisor in the academic area of his major program at the rate of 40 students per advisor with control of the assignment vested in the department chairman who will determine assignments. The admissions office will supply the departchairman copies of admissions forms of each incoming students so that he can match the student to the appropriate member of his department.
2. Inputs - The potential students will be identified by the admissions officers and after acceptance by the university will be involved in a pre-registration orientation session at which time initial counseling begins by the department advisor.
3. Sequence - The orientation and initial counseling by the assigned advisor is the beginning of a 4 year personal relationship between the advisor and his advisees. The control element will be a computerized record of the students progress toward his objective.
4. Environment - Each advisor will be supplied with a suitable office, pleasantly furnished to be conducive to a counseling environment.

Table IK

SOLUTION SPECIFICATION MATRIX

(DIMENSIONS)

	FUNDAMENTAL	RATE	CONTROL	INTERFACE	STATE
FUNCTION	Advise Individual Students	40 per Faculty Member	Advisor Load Dept. Chairman	Advisors Student Registration	Move Toward Automation
INPUTS	Students	1,000 Freshman per year	Universities Ability to Service Fresh.	Recruiting of Students	Expanding University
OUTPUTS	Knowledgeable Students	500 Graduates per year	Student Eval. Department Chairman	Employment & Placement Office	New Programs to meet New Needs
SEQUENCE	Freshman Seniors →	8 Semesters	Individual Advisors Monitoring	Admissions Placement	Streamlining of Degree Prog.
ENVIRONMENT	Campus	X	Faculty Office Departmental Offices	Buildings & Grounds Department	Physical Facilities Committees
PHYSICAL CATALYSTS	Computer	Basic to Terminals	Computer Center	Records & Admissions	Terminals All Departments
HUMAN AGENTS	Present Faculty	Replaced at 10% per year	Training Program Student Eval.	Recruitment of Faculty	Inclusion of Expertise in Program
INFORMATION CATALYSTS	Requirements for Degree	128 Semester hours	Curriculum Committee	State Law Regulations	SASC Learned Societies
	EXISTENCE, MANIFESTATION	MEASURES, GOALS	OPERATE, MANAGE	INTERNAL & EXTERNAL RELATIONSHIPS	FUTURE PLANNING

5. Physical Catalysts - The computerization of the student information system will provide the advisor with immediate access to all pertinent data necessary.
6. Human Agents - The faculty will develop proficiency in the interpretation of the university's regulations pertaining to his advissees. He will be skilled in counseling techniques and interpersonal relationships.
7. Information Catalysts - The university will compile a faculty advisors handbook with inserts for each academic area which will contain the necessary information to allow the advisor to perform his function.
8. Outputs - The system will generate successful students who will have completed the prescribed program leading to their degree objective with maximum efficiency.

The next task was to identify the exceptions contained in each component of the FIST so that a recommended system could be developed.

The workable system is here developed in the same format as the FIST i.e. component by component.
1. Function - The regularity of the system will be the assignment of 40 advisees to each faculty member. However in small departments with few staff the number may be increased and in large departments decreased. The admissions forms currently in use supply the necessary information for the advisor thus requires only the addition of an extra carbon for the department.
2. Inputs - The regularity of the input is the student who commutes to the university from his home. This places 90% of the students attending high school within 50 miles of the campus. The admissions office has access to the counselors within these high schools and therefore can identify special needs of individual students to be shared with the advisors assigned. The close proximity of the students also makes possible the pre-enrollment contacts referred to in the FIST. The exception is the dormitory student and the student from greater than 50 miles, the modification necessary will be that the advisors will need to conduct pre-enrollment counseling by mail. The concept of a pre-enrollment orientation period will also help bring together the two types of students. An additional exception is the transfer student. This student must apply thru admissions just as the incoming freshman therefore the same procedure can be followed with one modification. The admissions office will provide the counselor with an evaluation of the transfers credits with equivalence for the university. The final exception is the student who enters the university undecided upon the program he wishes to pursue. This is the most difficult to handle but each department will prepare an advisor to service a portion of these students until a decision is made. The important facet of this counseling is to keep as many options open to the student as practical.

3. Sequence - The student and advisor begin a relationship with the pre-enrollment orientation sessions and continue it until the student completes the program. This relationship provides a control factor on input and sequence. Monitoring of the advisors successes by the department chairman provides the control of the sequence. The state dimension calls for computer check points that will alert the advisor of potential trouble spots in the students program.
4. Environment - Each advisor assigned to the program will receive additional supportive services to facilitate his effectiveness with his advisees. There will be a rearrangement of office assignments to build clusters of advisors with similar advisees. Faculty will thus have the opportunity to interact and reinforce each other in this task. The state dimension calls for specific prebuilding planning of all new university facilities.
5. Physical Catalysts - The state dimension calls for complete computerization of all student data files and university regulations and program requirements.
6. Human Agents - The weakest link in the proposed system is the necessity of utilizing present faculty in developing the pool of advisors necessary for its success. Each Department Chairman carefully examined his staff and after consultation with potential advisors chose those most suited for the position.

The state dimension calls for the department chairman to develop criteria with which to screen prospective colleagues as to their suitability for accepting the responsibility of advising students as one factor in appointment decision. The control factor includes periodic evaluations by students of the success of the system and interactions with the Registrar as to specific problems encountered by students as evidenced in their progress towards the degree.
7. Information Catalysts - The chairman of each department charged each of the advisors with the development of materials to be considered for inclusion in an advisors handbook. The admissions office and the records office received similar charges from the administration.
8. Outputs - The basic control of the entire system will be self-evident in the success of each student in accomplishing his goal of completing a program in the university. The present evaluation of the system can come only from the control points in the sequence dimension.

The system is presently in the process of being implemented in the Department of Education and will be a pilot model from which refinements and modifications will be determined before acceptance by the entire university.

Dr. Myron Swanson, Professor of Philosophy at Bemidji State College, Bemidji, Minnesota

INCIDENTAL EXPERIENCES AND COMMENTS

"I think that one of the virtues of having been exposed to, and having learned something about, the IDEALS Concept is to develop an ability to apply it, and to apply it in ad hoc situations, and apply parts of it."

"IDEALS has made me that much more creative because creativity is after all basically realizing that no matter what you confront, if you have more than one option, you are creative at least to that degree. If you have five options you are far more creative than if you only have two. So creativity is realizing that in any given human situation a number of options are open to you . . . IDEALS is not only itself an option that I didn't have before, but in turn it stimulates creativity because it demands the development of options every step of the way and consciously does this."

Dr. Swanson has had many opportunities to use his knowledge of the IDEALS System in design situations. These experiences are related to show their diversity in a formal design situation as well as informal problem solving.

High Level Purposes

"Probably the most fun I had in curriculum re-evaluation was in the Philosophy Department, which is my own department. Everything went real well there -- you know philosophers think in an orderly fashion. The only trouble was that my colleagues kept coming through with high level functions which they wanted to expand into marvelous metaphysical systems, We've overcome that, and things are underway.

Curricula for the gifted

Last October a frantic telephone call came to me from a friend of mine in the State Department of Education asking me if I would serve as a consultant in Northern Minnesota at a series of meetings for high school personnel. I went with the State Department people to a series of meetings in five different places involving about forty high schools and kept running into the same situation. They had been approaching their programs for the gifted with a patchwork approach -- a little of this, a little of that. A lot of them had been doing something, which I think is equally alarming; that is, telling the kids, "Look, you're bright! Why don't you go out and do something?" Now that's no good either. That's why applying the IDEALS approach can help. Because it can give some direction to these kids if they do use it to plan out what they want to do next year. It will give them some direction and they won't just be told, "Go! Do something!" as if the brightness factor can guarantee that they will do something.

At that first meeting with the people on the gifted, we had one especially hopeful lady who kept asking, "What can I do? These bright kids are a problem in the schools.

They're disruptive. They're turned off." She cited me all kinds of statistics on how they're dropping out of school and, "How can we punish them? How can we make them do this?... Punish!...Make!...Punish!...Make!...Make them do something!"

Several people said, "Why don't you plan something that they'd want to do?" This didn't seem to register with her. She kept coming back. So I finally said to her, "Look, that's a special problem. Why don't you stick around, and if anybody else wants to stick around let's see what we can do with that." I had a sneaking suspicion that if she would sit down and struggle with what she actually wanted to accomplish, in other words what the purpose of the whole thing was, she might begin to see that there was an IDEAL way of meeting her problem that didn't involve a system for punishment planning. So they all stayed. What we did was we said, "Well, what's the purpose of punishing these bright kids?" And then, it may sound stupid but we said, "What's the system for beating them? What's an IDEAL way of eliminating this purpose? What can we do to eliminate it?" And she saw it herself right off. Obviously, it was some kind of planning in the curriculum that is completely nonessential. Now that seemed very elementary to me, but it took the exercise to get her to see it. Giving her the flat answer as two or three had done in the situation simply didn't do it."

T V Series - Application of IDEALS to Trivia

"I became a consultant for the Metropolitan Council which is a regional council; a policy-making council for the Twin Cities areas in Minnesota. Our first task was to plan a two-program television series which is going to sell the concept of regionalism to the area. We sat at a meeting for about two and a half hours. These planners simply couldn't agree on what this thing was all about. I said, "Surely you people must do some matrix planning of some sort. Why don't we try some of that and see if we can come up with some kind of a focus for these T.V. programs?" And so we got going fast and it went like clockwork and then their group took over and they are now actually developing the program as a result of having determined the purpose of the two programs. But here are people who had actually used the techniques but it had never occurred to them to apply it to something as simple as a T.V. program. That's why I think I would put in a plea for the IDEALS System, that it allows itself to be applied to the trivial, almost as well as to the most consequential types of things with equally happy results.

Myron Swanson

Revision of liberal arts core of the B.A. degree

"A committee had been consituted by the Faculty Senate which was attempting to review the liberal arts core of the Bachelor of Arts degree. I discovered that they had accumulated some, I think it was 91 or 92, single-spaced pages of testimony. They had accumulated an additional ream-box full of plans from various faculty members. They had absolutely no notion of what they were doing or where they were going. They were accumulating. They were the pack rats of the liberal arts core. So I cornered the Vice-President and said, "Let me go try something out that I was exposed to at the summer design conference."

He was able to arrange it and at the meeting, I plunged in with this question, "What is the purpose of a Liberal Arts Program?" Well, we got to work and in an hour and a half we had done a purpose expansion - for the curriculum core of the Liberal Arts Degree - and they worked well and they worked fast and did a very good job. We did a purpose expansion and we did get through limitations and regularities. I've been with them a couple of times and they were well on their way with programs about half ready. What we did was we pulled them up out of the morass. The stuff they had accumulated sits in the file cabinets. It will be used when, and where it is necessary. The job is underway. So here the system served as a starter to sweep away something that was there and to get us going."

Myron Swanson

History - Curriculum re-evaluation

"Complete curriculum evaluation has been called for in all state colleges in Minnesota. In the History department at our school, all eighteen people are tenured and they're all very defensive because they haven't enough students left for eighteen people to teach. They were quite positive that what we were going to do was to set up a system to provide for self-liquidation. This may well be true. The art was to get them to accept it gracefully and to do the job in a respectable manner. In other words, if cut-backs must come, what are the priorities by which they should be made. It took one approach with them to get them started. I had to let them get some talking out of their system, then rush in with the pyramid and strike them with the stunning blow that an IDEAL curriculum and the teaching of an IDEAL curriculum would cost nothing; that they were down here, and they'd have to come somewhere in between so let's get with it. It worked. We got the system going."

Myron Swanson

Art - Curriculum re-evaluation

"The curriculum re-evaluation directive was well received by the Art Department which is rather large (12) for a student population of 4800. As they discussed purpose at the first meeting they seemed to envision themselves training future Michaelangeloes. At the second meeting we came up with a purpose expansion, an outstanding of the limitations, and regularity-particularly in terms of students. Their students was minimal and the rest of it was stretched out into Jewelry Making, Painting I, Painting II, Painting III, Painting IV and so on. There is a very happy reorientation going on. They now realize that the purpose they really serve in the school is a service department. If they have an art major of the classical variety, it's incidental and accidental, rather than the serious purpose for which they exist."

Dr. James C. McDonald, Supt. of Schools, Vista, California

Incidental Experiences
Decisions Concerning New Construction

"We got some new construction going on the present campus and it looked like we were going to have a three-two split on the Board as to whether or not we should have a locker-room addition for the boys. So we took our Physical Education people and came up with a list of purposes for this new building. Following that meeting which really refined some of the ideas of the staff, prior to meeting with the architect, they sharpened up on arguments on why they needed the building; what purposes would be accomplished in that new building; either those that could not be accomplished at present, or were being accomplished at a very minimal level in the present facility.

We put these on a big chart and took it to a public board meeting and for a half-hour discussed these particular functions. At the end of that time, the President of the Board, took a vote and it was 5-0. It would have been otherwise without the first step of the IDEALS Concept. That worked so well, we also used IDEALS with the Home Economics, drafting, electronics, and TV facilities which we are planning to build."

Use of IDEALS in an Informal Situation

"We had a football coach that the Board of Education, the Superintendent, the Principal, and the Athletic Director and almost the entire athletic staff recognized had to go. It wasn't just a case of a win-loss record. It was a series of organizational problems--just a real mess, but the problem was that they guy was a fantastic politician.

After we fired him, the Board President and I were 'invited' to a Booster Club meeting. Duke Sneider, the President of the Booster Club, was a personal friend of the football coach. I would say that, of the 40 people at that meeting, 37 of them came ready to nail the Superintendent and the Board President to the wall. That was the seeming purpose of the meeting. For myself, I didn't do any special preparation at all for the meeting except that I knew if I said one negative word about the present football coach I would get a defensive reaction because the meeting was rigged.

As the meeting started there was a brief statement of the whole business that ended with an introduction of me that was in effect: Here's the Superintendent who's going to tell us why the football coach was fired. I said, 'Thanks for the very nice introduction.' And then, 'Let's talk about the purposes of the football program and the athletic program, because whether we like it or not, the football program sets the pace for the rest of the athletic program. It brings in the most money. It has the most attendance. Let's just talk about the purposes.' I made sure that everybody responded to what the purposes of the program were. They came up with:

competition
winning
morale
character
responding under stress
discipline
gate receipts
keeping active
fun
companionship
build potential leadership
maturity
pride
self-image

A pretty good list from a pretty negative group of people. I didn't add any or delete any and we talked about those purposes and the purposes of the athletic program. Alright, fine, I said, 'we all agree on those. However, we're faced with the problem of replacing the present coach. This is a fact. It's been accomplished, though some of you folks don't like it. So, let's talk about the ideal coach. What kind of an ideal person could meet these purposes?' This is the list that they came up with:

Interested in kids
A balanced approach
Judgment
Experience
Organizational ability
Willingness to give time
Leadership ability
Ability to teach
Strength of character

At about this point Duke Sneider said,"The last few seasons, we've had the worst organizational problems that I've ever seen." And with that everybody got to talking about and recognizing the weaknesses of the program. The important factor was that they were recognizing deficiencies in the present system and when I was finished, the meeting was over. No one asked, 'Why did you fire the present coach?' They answered the problems themselves. This is what the IDEALS Concept gives us. It gives us a structure, a plan, to build on. Not a rigid plan because you can selectively emphasize what is essential from it. You can use part of it, or you can use the whole process. It involves the group processes and gives a group structure. I know that at that particular type of meeting, a year ago, I wouldn't have handled the meeting in this particular way and I'm sure it would have had far different results. So, to me, as I see it, this is the big gain that I've had as a result of exposure to this concept."

Student planning with IDEALS (The Gifted)

"We have a program for the gifted in the state of California. Traditionally, a gifted program is handled by a counselor who comes up with a number of activities to involve the kids in which are supposed to be significantly different than those in the regular program. This is where you get into a hassle with the State people. "What is significantly different?

What you've got is a real sharp group of kids, which is sometimes much sharper than the counselor working with them. I had the counselor come in one day asking, "What am I going to do with these kids?" I said, "Don't worry about it. Those kids have more I.Q. than both of us put together. Don't always be thinking up things for them to do. Let them think up the program." So I said, "Let me meet with the group."

At their next get-together I met with them and I went through a brief program, introducing IDEALS to the kids. Following this brief presentation, I said, "I'm going to take you through one of the first steps. Alright, let's just talk about purposes. What is the purpose of our Gifted Program?" This is what they came up with in just about ten minutes:

To learn
To enrich
To broaden our awareness
To generate interest in other subjects
To stimulate better achievement
To create a good challenge
To develop relationships
To justify counselor existence
To provide needed relief from ordinary classes
To create a different atmosphere

At the end of that ten minutes I said, "Fine, at the next meeting take five minutes and discuss these ideas. If you would like, I'll come back and work with you and we'll plan next year's program." Some of these kids are seniors. Many of them are sophomores, junior and freshmen.

The counselor reported back that they met and kicked it around, and the more they kicked it around, the more it made sense to them. So I got a request from the gifted kids, "Would you meet with us on such-and-such a day for a three-hour block of time? We would like to map out next year's gifted program." At that time we'll take these purposes as a starting point and go through the IDEALS Concept. I think we'll come up with a program that will be much more acceptable to them. They'll have some of the understanding that is developed in group processes, and I am looking forward to meeting and working with those kids. It's a lot of fun."

In addition to these results from the IDEALS Concept in the field of education, information concerning evaluation of the entire project can be found in Part B, Evaluation. At the end of the report a short list, updating the projects, proposals, designs and experiences of the participants, is presented to give a third, interface dimension of IDEALS and the realization of its potential.

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PART B

EVALUATION

I. Introduction To The Evaluation

In order to understand and evaluate the results of the project in the context of the project objectives, it is necessary to look closely at the components of the control dimension of the system and the data produced. The following table (Table IIa) is a modified form of the matrix used to design the project system. The fundamental and rate dimensions (which define the elements) are combined for simplicity. The control dimension gives the core of the evaluation by specifying eleven components that were designed to aid the major system in accomplishing its purposes.

There are four parts to this evaluation section.

I. Introduction

II. A chronological description of the evaluation procedures carried out during the course of the projects

III. A detailed data base and results of the evaluation organized in terms of the training program system elements

IV. A series of recommendations concerning the overall evaluation of the project

Examples of the materials used for the various control components referred to throughout this evaluation can be found in the appendix.

Table IIa

PROJECT SYSTEMS MATRIX

ELEMENTS	DIMENSIONS	
	FUNDAMENTAL-RATE	CONTROL
Purpose	1) to prepare educational professionals for the role of utilizing the IDEALS Concept in educational curricular and program developing. 2) to educate the professionals involved to the point where they could teach others in their organization the ideas. 3) to produce materials which can be used in IDEALS Concept training.	Overall evaluation by U.S.O.E. personnel
Inputs	23 education professionals from various fields within education (4 superintendents, 2 principals, 2 teachers, 3 curricular specialists, 3 university administrators, 3 university professors, 3 Federal program coordinators, 1 learning center administrator, 1 adult education, 1 educational law) from various parts of the country.	1) Application forms 2) Series of pretests
Outputs	Planned for outputs to be educators who have knowledge of and skills in the use of the IDEALS Concept and who use the idea in educational planning. (See other parts of this paper for discussion of success)	3) Attitude measures 4) Comprehension exams 5) Participant projects 6) Systems Design Ability 7) Incidental Outputs

PROJECT SYSTEMS MATRIX
(Continued)

ELEMENTS	DIMENSIONS	
	FUNDAMENTAL-RATE	CONTROL
Sequence	a) three-week course--31 July to 18 August 1970. (see outline Table Ib) b) two months of participant practice in using the ideas in their own organization on their actual problems. c) two-day workshop--26 & 27 October 1972. (see outline--Table Ic) d) three months more of participant use of the ideas--28 Ocotber 1972 e) three-day workshop and wrap-up session--7,8, & 9 February 1972 (see outline--Table Id)	8) Teaching strategy 9) Recommendations 10) Workshops 11) Group projects
Environment & Physical Catalysts	a) Course held Wisconsin Center Madison, Wisconsin. Attendees stayed at Allen Hall, Madison. b) Participants own organizational climate. c) Session held Wisconsin Center. Attendees stayed at Lowell Hall, Madison. d) Participants' own organizational climate. e) Fontainebleau Hotel, New Orleans, Louisiana	Questionnaires Dialogue
Human Agents	IDEALS Concept Specialists IDEALS Concept consultants from field. Education professors. L.C. staff	Questionnaires Dialogue
Information Catalysts	Primarily 1) Set of "Posters" made up for the course 2) Gerald Nadler, Work Design: A Systems Approach. 3) Richard Clark and J.T. Johnston, IDEALS Concept Cases and Program.	Questionnaires Dialogue

II. Description of Evaluation:

A description of the evaluation procedures during the project can be divided into seven time phases:

Phase I - Pre-training (March-Aug 72)

Phase II - Three-week course (Aug 72)

Phase III - Interim period I (Aug-Oct 72)

Phase IV - Two-day follow-up (Oct 72)

Phase V - Interim period II (Oct 72-Feb 73)

Phase VI - Three-day follow-up (Feb 73)

Phase VII - Analysis-preparation of report (Feb-Aug 73)

Phase I - Pre-training

The basic action during this phase was the design of the three-week course using the I.C. design strategy. (Tables Ib, Ic, and Id contain the course outlines for the training course and the two follow-ups. More detail concerning the design of the last two can be found under data evaluation.) The course as well as the whole project centered around the three purposes.

1) to prepare educational professionals for the role of utilizing the IDEALS Concept in educational curriculum and program development,

2) to educate professionals involved to the point where they can educate others in their own organizations to carry out the ideas, and

3) to produce materials and procedures which will permit others to implement the same program in educational organizations.

To aid in accomplishing these purposes, an evaluation system was developed, with the primary focus during this phase on controlling inputs, i.e., selecting the participants for the project.

COURSE OUTLINE — Table IIb

SESSION	DATE & TIME	SUBJECT	SPEAKER (For biography, see Appendix AA)
	Monday, July 31		
1	8:30-10:00	Pre-course evaluation measurements	Schultz
2	10:15-11:45	Determination of the Goals and Objectives for Education for the next n years Nominal group procedures will be used by attendees to determine these goals and objectives.	Johnston & Staff
3	12:45-2:15	Determination of Priorities for Educational Projects	Johnston & Staff
4	2:30-4:00	Introductions; Overview of the Project, Course, and Ideals Concept The objectives of the project as a whole will be explained and related to the three week course and the follow up sessions. All aspects of the IDEALS Concept will be briefly explained to provide a framework for the rest of the course.	Nadler
5	8:00-9:30PM	Overview of the IDEALS Concept as Related to Goals and Priorities in Education A continuation of the previous session but relating the Ideals Concept to the Goals and Priorities determined in Sessions 2 and 3.	Nadler
	Assignment:	Read *Work Design: A Systems Concept* (WD) Chps. 2, 17 & 18 Scan Ch. 3	
	Tuesday Aug. 1		
6	8:30-10:00	A Definition of "System" as it applies to the Educational Setting The elements and dimensions of a system will be introduced and explained in terms of their application in education.	Gephart

7	10:15-11:45	Practice with the System Definition	Gephart
8	12:45-2:15	The Benefits of using system elements and dimensions in education	Gephart
9	2:30-4:00	Goals for system design: Measures of results of educational systems The educational system exists within the total society and must serve its goals. The development of a concept of national goals will provide this setting as the basis for identifying measures of results of education.	Nadler
10	8:00-9:30PM	The need for a design methodology in education. Generally, the conventional approach to educational system design is based on research methodology. While valuable for developing generalizations and theories, the research approach, when used for design, requires certain implicit assumptions to be made which hamper the design.	Nadler
	Assignment	Read WD Chps. 19, 21 & 22 IDEALS Concept Cases and Programs (CB) Chp. 13	
	Wednesday Aug.2		
11	8:30-10:00	The Design of the Applied Research Branch (OE). An illustration of the use of the IDEALS Strategy in educational design.	Gephart & Staff
12	10:15-11:45	Purposeful Activities of Man Each human being seeks to achieve certain unique purposes. The relationship between each purposeful activity and its unique strategy will be discussed . The 10-step design and development strategy of the IDEALS Concept will be explained.	Nadler

13	12:45-2:15	Step I:Function Determination It is necessary to find the largest system or highest function level of interest for design. Techniques and procedures for this will be described and ways of identifying the gross limits will be discussed.	Nadler
14	2:30-4:00	Function Determination Practice Session I Attendees will gain skill in using several techniques for function determination and function expansion.	Johnston & Staff
15	Evening	Open	
	Assignment:	Reread WD Chp.22 Read CB Chp.12	
	Thursday Aug.3		
16	8:30-10:00	Function Determination Practice Session II	Johnston & Staff
17	10:15-11:45	Function Determination Workshop: Course Project I Attendees will be divided into groups of four or five members each for work on a course project. The course project will consist of the design of an educational system using the concepts introduced. The groups will be in "competition" with each other. Several sessions, beginning with this one, will be set aside for this purpose.	Staff
18	12:45-2:15	Function Determination Workshop: Course Project II	Staff
19	2:30-4:00	Case Illustration: Design of an Industrial Engineering Curriculum	Robinson
20	8:00-9:30PM	Function Determination Workshop: Attendee Projects I Sessions beginning with this one will be set aside for attendees to begin work on the design projects in their own organizations.	Staff

	Assignment	Work on course project Read WD Chp. 23 (Supplemental CB Chp. 1)	
	Friday Aug.4		
21	8:30-10:00	Function Determination Workshop: Attendee Projects II	Staff
22	10:15-11:45	Step 2: Ideal System Develvelopment I The designer of an educational system must free his thinking from conventional methods and must develop a target educational product or procedure which represents the ultimate or desired system. This requires forgetting what is presently being done. Techniques for developing this ideal system target will be discussed.	Johnston
23	12:45-2:15	Step 2: Ideal Systems Development II	Nadler
24	2:30-4:00	Ideal System Development Workshop: Course Project I	Staff
25	Evening	Open	
	Assignment:	Read CB Chp. 11 (Supplemental CB Chp. 5)	
	Saturday Aug.5		
26	8:30-10:00	Function Determination Workshop: Attendee Projects III	Staff
27	10:15-11:45	Review of First Week	Nadler & Johnston
28, 29, 30	Afternoon & Evening	Open	
	Sunday Aug. 6	Open	
	Monday Aug. 7		
31	8:30-10:00	The Use of Nominal Groups: Group Dynamics for Fostering Creativity Often groups are required for developing alternatives and	Delbecq

		making decisions for any given step; techniques for using groups most effectively for stimulating creativity will be discussed.	
32	10:15-11:45	Ideal System Development Workshop: Course Project II	Staff
33	12:45-2:15	Ideal System Development Workshop: Attendee Projects I (Regularities)	Staff
34	2:30-4:00	Case Illustration: A Community Run Systems Approach to Child Development	Ingle
35	8:00-9:30PM	Ideal System Development Workshop: Attendee Projects II (Regularities & Innovations)	Staff
	Assignment	Work on course project Read WD Chps. 8, 24 & 25	
	Tuesday Aug. 8		
36	8:30-10:00	Step 3: Information Gathering I Treating this step as a system leads to several guidelines to minimize the ammount and maximize the value of any information collected. Techniques for achieving these objectives will be discussed.	Nadler
37	10:15-11:45	Step 3: Information Gathering II	Nadler
38	12:45-2:15	Ideal System Development Workshop: Attendee Projects III (Some detailing)	Staff
39	2:30-4:00	Step 4: Alternative Suggestions Information collected often shows portions of the FIST that are not yet implementable. Developing alternatives that stay as close as possible to the FIST is the purpose of this step.	Johnston
40	Evening	Open	
	Assignment:	Work on course project Scan WD Chp	

Wednesday Aug. 9

41	8:30-10:00	Human Factors Engineering Principles in Education Adapting the environment based on human physical capabilities and limitations as a means of enhancing learning.	Robinson
42	10:15-11:45	Curriculum and Instruction Design	DeVault
43	12:45-2:15	Ideal System Development Workshop: Attendee Projects IV (Dividing into ultimate and feasible)	Staff
44	2:30-4:00	Case Illustration: Governor's Education Commission Study, State of Wisconsin	Kellett
45	8:00-9:30PM	The Concept of Control The basic ideas that should structure a common understanding whenever the word control is used is related to the system definition, especially the control dimension.	Delp
	Assignment:	Finish course project for presentation. Read WD Chps. 7 & 26	
46	8:30-10:00	Decision Theory Models in Education The basic parts of any decision are described	Gustafson
47	10;15-11:45	Step 5: Selection of the Workable System Techniques for deciding which alternative is most desirable for actual implementation.	Nadler
48	12:45-2:15	Ideal System Development Workshop: Attendee Projects V (Selecting and Detailing the F I & T)	Staff
49	2:30-4:00	A Behavioral Psychologist looks at the IDEALS Concept	Goldsmith
50	8:00-9:30	Presentation of Course Projects	Attendees (Staff)

	Assignment	Read WD Chp. 27	
	Friday Aug. 11		
51	8:30-10:00	Step 6: Providing System Details	Nadler
52	10:15-11:45	Conflict Resolution in Education The making of decisions concerning various educational systems requires resolving differences of opinion regarding these. Techniques for resolving conflicts and reaching decisions will be discussed.	Filley
53	12:45-2:15	Ideal System Development Workshop: Attendee Projects VI (Planning the Information Gathering)	Staff
54	2:30-4:00	Research Findings Concerning Facilities Design	Wakefield
55	Evening	Open	
	Assignment	Read WD Chps. 20 & 28	
	Saturday, Aug. 12		
56	8:30-10:00	Step 7: Reviewing the System	Nadler
57	10:15-11:45	Programs for Continuing System Design and Improvement Techniques for designing a program within organizations for using the Ideals Concept for system improvement are discussed.	Nadler & Johnston
	Assignment:	Each attendee will design a system design and improvement program for his own organization. These will be presented on Tuesday, Aug. 15 (Session 68). Read WD Chps. 29 & 30 CB Chp. 8 (Supplemental CB Chp. 7)	
58, 59, 60	Afternoon & Evening	Open	
	Sunday Aug. 13	Open	

Monday Aug. 14

61	8:30-10:00	Step 8: Testing the System and its Components	Gephart
62	10:15-11:45	Step 9: Installation of the System	Gephart
63	12:45-2:15	Preparation of Educational Product Development Specialists	Gephart
64	2:30-4:00	Evaluation of Educational Products and Procedures	Clasen
65	8:00-9:30PM	Feedback Panel Session To assess the feelings of the attendees about the utility of the IDEALS Concept in educational systems design.	Lambert(Chairman) Clasen, DeVault, Gephart
	Assignment	Work on System Design and Improvement Program	

Tuesday Aug. 15

66	8:30-10:00	Educational Economics and Finance	Hansen & Weisbrod
67	10:15-11:45	Evaluation in Federal Projects	Gephart
68	12:45-2:15	Presentation of System Design and Improvement Programs Attendees will present the programs (discussed in Session 57) which they have designed for their own organizations. These will be discussed critically.	Attendees (Staff)
69	2:30-4:00	Preparation of Interim Reports I Each attendee will prepare an interim report of his progress in designing the system for his own organization. This will serve as a start for the continuing work he will do on the project after the end of the three week session. The reports will be presented in Sessions 79, 81 and 82. This is the first of a series of sessions which will be set aside for preparation.	Staff

70	Evening	Open	
	Assignment:	Work on interim reports Read WD Chp. 31	
	Wednesday Aug. 16		
71	8:30-10:00	Design of the Two-day Follow-up Session I During this and Session 76 the two-day follow-up session in October will be designed.	Johnston
72	10:15-11:45	Step 10: Establishing Performance Measures The last step of the design strategy will be discussed in relation to the evaluation strategy. An educational design exercise in this concept will be presented.	Nadler
73	12:45-2:15	Educational Research and Development	Bush
74	2:30-4:00	Preparation of Interim Reports II	Staff
75	Evening	Open	
	Assignment:	Work on interim reports and design of two-day session	
	Thursday Aug. 17		
76	8:30-10:00	Design of the Two-day Follow-up Session II	Nadler
77	10:15-11:45	Preparation of Interim Reports III Interim reports are due at the end of this session.	Staff
78	12:45-2:15	Design of the Three-day Follow-up Session	Nadler
79	2:30-4:00	Presentation of Interim Reports I Here and in sessions 81 and 82, attendees will present their interim reports for critical discussion and suggestions.	Attendees (Staff)
80	7:00-	Banquet	
	Assignment	Relax	

Friday Aug. 18

81	8:30-10:00	Presentation of Interim Reports II	Attendees (Staff)
82	10:15-11:45	Presentation of Interim Reports III and Review of the Course	Attendees & Staff
83	12:45-2:15	Post-Course Evaluation Measurements and Adjournment	Schultz & Staff

IDEALS CONCEPT TRAINING (Table IIc)

2 day Follow-up Session

26 - 27 October 1972

SCHEDULE

Wednesday evening 25 October 7 pm to 10 pm Lowel Hall	Individual Sessions (scheduled for one hour)	Gerry Nadler Jim Johnston
Thursday morning 26 October 9am - 12:15 Wisconsin Center Room 326	Full group review and general problems. Session to deal with questions concerning understanding of the IDEALS Concept and general problems in its use.	Staff & Attendees
Thursday afternoon 1:15pm - 4:30pm Wisconsin Center Rooms 326, 211, 312, 305	Small group question and answer sessions. Four groups each with an IDEALS resource person work out specific project difficulties	Staff
Thursday evening 7pm to 10pm or as needed	Individual sessions	Staff
Friday morning 27 October 9 am - 12:15	Open - Will be used for, full group, small group or individual sessions depending on needs and desires of attendees	Staff
Friday afternoon 1:15 pm - 4:30 pm	Plan three-day workshop for February 7, 8, 9	Staff & Attendees
Friday evening as needed	Individual sessions	Staff

STAFF - GERRY NADLER
JIM JOHNSTON
BILL GEPHART
ALAN SCHARF - Industrial Engineer with Saskatchewan Resource Council

Three-Day Conference Schedule (Table IId)

Wed Morn
9:00-12:00 Project Report Session

Speaker	Report title
P. Gomez	Indian Education System
R. Mansfield	Davis High School Food Service System
M. Norton	Student Involvement in IDEAL Concept Planning
F. Whittacre	University Student Advising System

Lunch
12:00-1:30
INTERVIEWS - See Schedule for your interview time

Wed Aft
1:30-5:00 SMALL GROUP DESIGN SESSIONS

	RUN-THRU A	RUN-THRU B	FOLLOW-UP	IC PROGRAM
LEADER	P. Bowersox	J. Goodman	J. McGrew	P. Gomez
	R. Dingle	J. Albertine	M. Ebbert	W. Bozeman
	R. Jahelka	L. Maestas	H. Hatala	T. Dahle
	H. Mansfield	M. Montano	J. McDonald	M. Norton
	B. Meeks	F. Whittacre	R. Mansfield	D. Salch
		D. Younger	M. Swanson	L. Swenson
STAFF	J. Johnston	J. Schultz	R. Spaccarelli	J. Thomson

5:00-5:30 INTERVIEW / 5:00-6:30 IDEALS Concepts Review Video Tape

Th Morn
9:00-12:00 SMALL GROUP CONT.

Lunch
12:00-1:30 INTERVIEWS - See Interview Schedule

Th Aft
1:30-5:00 INCIDENTAL EXPERIENCE SESSION
SPEAKERS
T. Dahle
R. Jahelka
J. McDonald
M. Montano
M. Swanson

5:00-5:30 INTERVIEW - See Interview Schedule

Fri Morn
9:00-12:00 SMALL GROUP REPORT SESSION

Lunch
12:00-1:30 INTERVIEWS - See Interview Schedule

Fri Aft
1:30-5:00 WRAP-UP SESSION Chairperson - D. Younger

Participant Selection

The method used for controlling participant inputs was the selection process. For this project, the goal was to have educators attending who represented all levels of decision making from classroom teachers to superintendents and curriculum specialists, to university professors and administrators, and represented all parts of the country. Approximately 7000 letters (see Appendix A) were sent to the following sources:

1) Superintendents of school districts
2) State Departments of Instruction
3) State associations of School Administrators
4) Colleges and Universities with an enrollment over 1000
5) Departments of Education in the above colleges and universities
6) Education R&D centers and labs
7) Federal Office of Education (excluding the research training branch)
8) Training Branches or Agencies in Federal Departments (i.e., Civil Service Commission)
9) Training or Personnel Deaprtments in industries and organizations (i.e., American Society of Training Directors)

These letters requested applications from interested members of the above organizations who were responsible for and involved with the development level of educational products and procedures in any area. Application questions were concerned with the applicants' type of work, his/her amount of experience in it, his/her experiences with design or planning methodologies, the distribution of his/her daily activities, and the type of project they anticipated working on during the program. A project completed by the applicant was to be returned with the application.

To ensure a mixed group of attendees, 102 applicants were randomly chosen and divdided into thirteen groups based on their distribution of time and duties. A further breakdown category was their job level in the employment hierarchy. One applicant was selected at random from every four within the thirteen groups. Twenty-five prospective participants were thus chosen so that each applicant had approximately the same opportunity to be selected. Of the original twenty-five, only twenty-three were finally able to attend.

Control Group Discussion

Initially, it was planned to pair applicants according to the type of project they anticipated working on to obtain two similar groups of participants. One group would attend the training session and learn the IDEALS Concept, while the other group would function as a control group. The purpose of this division was to measure the effectiveness of the

IDEALS Concept in contrast with other design methodologies. In order to accomplish this, the control group would submit their completed project (the anticipated one) to be compared to the similar-topic projects completed by the training attendees.

As projects were submitted with the applications, it became apparent that comparison between control member projects and attendee projects would be difficult for several reasons:

1) The projects obtained were very diverse in scope, nature and level. To find a uniform measure by which to evaluate the projects would be extremely difficult.

2) The project reports represented only the final aspects of a design problem and gave little information concerning the process(es) used in the actual design - and therefore little information as to the 'system design ability' of the individuals.

3) The process of systems design seems to involve side issues, like creativity and rigidity, and an evaluation of systems design should include some aspects of these issues.

4) It was felt that many potential control members might not be motivated to complete the desired project and the project staff would be left with no comparison information.

During the early phases of the project, several alternate comparison techniques were proposed. The first was to compare one of the submitted projects that was similar to a proposed attendee project. Thus, attendees were to have been chosen according to available projects. This method was determined useless since dissimilar environments, as well as different design methodologies, could cause totally different projects. The second proposal was to give a system design ability questionnaire to both groups after th final follow-up session in February 1973. The control group would then have been chosen according to their environment, distribution of daily activities, and job status level. After a review of the applicable literature for designing the questionnaire, it was decided that there were no developed measures which could be integrated into such a questionnaire.

As a result, the planned use of the control group was reluctantly abandoned,and the participants were chosen as described in the beginning.

8

Phase II - Three week course (Aug 72)

The course was carried out from 31 July to 18 August 1972 according to the outline in Table Ib. A list of the course speakers and individual biographical data can be found in Appendix AA. There were 23 attendees. Two main texts were used and distributed to each attendee; these were:

Gerald Nadler, Work Design: A Systems Concept
Richard Clark and J.T. Johnson, IDEALS Concept Cases and Programs.

In addition,a set of "posters" indicating the IDEALS Concept in outline form were distributed. Most speakers also distributed information concerning their topics.

During the basic training period a variety of evaluative components were used. These components dealt with gathering information on the participants' attitudes, on the participants' comprehension of the I.C. and on the participants' reactions to various aspects of the course. Specifically, the components of evaluation were: pre and post attitude measures, session evaluation forms, weekly evaluation questionnaires, a final couse evaluation questionnaire, an objective final examination on the IDEALS Concept, a pre-pilot ranking scale, and a follow-up design of the first follow-up.

At the beginning of the 3-week block, before the course had actually begun, a series of pretests were given to the participants in order to determine their baseline level on a number of creativity, rigidity, and achievement scales (see Appendix B).

The scales used were:

1. The Gough-Sanford rigidity scale
2. The Davis creativity attitude scale
3. The Davis creativity inventory scale
4. The Edwards PPs achievement scale
5. The Rotter internal-external control scale.

The five scales were given again at the ned of the 3-week course to determine if the three-week course had had any effect on these initial baseline attitudes.

Session evaluation forms (see Appendix C) were initially given after each lecture during the three-week course. These consisted of questions concerning instructor knowledge, organization of his/her presentation, relevance of the lecture to the attendee's work, the level of the presentation (theoretical or applied), etc. The session evaluations served two purposes: (1) they acted as a control on future lecture content and lecturers, and (2) they served to evaluate each instructor on his/her teaching abilities (i.e, topic relevancy, attendee motivation, and overall presentation).

The session evaluations were given after selected lectures (those by outside speakers and the main speakers as opposed to all lectures) when the attendees stressed their dislike of so many questionnaires. Data produced from the evaluations was compiled by computer showing a mean and variance for each question and was posted for the attendees to see. (see Appendix D)

Two weekly evaluation questionnaries were also given during the course (See Appendices E and F) with a final course evaluation questionnaire given at the end of the third week. (See Appendix G) On these forms, questions were asked that provided feedback to the staff concerning the instruction, the usefulness of the activities and their sequence, comprehension by participants of the concept, and the interest level of the attendees. The two weekly evaluations were used to modify the couse based on participant suggestions. The final evaluation of the course went into depth, containing questions pertaining to the accomodations, the staff, participant opinion of the concept, and future uses for it, as well as recommendations for future courses.

To gain information about the participants' ability to use the IDEALS Concept, plans weremade for the staff and attendees to design a system together. At the beginning of the third week, they began a design for the two-day follow-up to be held in October. The FIST was completed by the end of the third week (See Appendix H). During the interim between the training session and the first follow-up, the staff completed the design of the follow-up.

At the end of the 3-week training session, a final examination (See Appendix I) was given to meaure the participants' knowledge and comprehension of the concept. The exam consisted of subjective and objective questions concerning 1) definitions, 2) necessity or dispensibility of steps, and 3) responses to situations drawn from previous university courses in systems design. The multiple choice, true/false, and matching questios were scored at one point per question. There were 47 possible points in the subjective section. The short-answer questions totaled 24 points; one point for fill-in-the-blanks, and 3-5 points for identifications and short answers. This gave a sum possible score of 71 points for the exam. Further analysis of the test resulted in discarding certain questions to leave a maximum score of sixty.

Directly following the three-week training course a pre-pilot subjective ranking scale (See Appendix II) was completed for each attendee by a staff member familiar with participant abilities. Participants were rated on their understanding and ability to use both the critical steps of the concept and the overall strategy. Scoring was on a scale from 1 to 7, with 1 indicating a null score (unable to make rating due to insufficient information), and 7 denoting complete understanding. Based on the tentative usefulness of this scale, a second pilot ranking scale (See Appendix K) was developed to be used at the 2-day follow-up.

Phase III - Interim period I (Aug-Oct 72)

Near the end of the three-week course, each participant was given time and aid in defining a project to be of use in his/her particular educational organization on which he/she was to apply the IDEALS Concept. The goal was to have a finished project by the three-day follow-up session in February 1973. Work on the project began immediately. During this interim, the participants were in their own organizational setting. Contact with the staff was made available to them via telephone and/or mail for close consultation on any problems they were having. Further, reports of significant problems and solutions were passed on as an aid to all participants.

Combining the evaluation information gathered at the three-week course and the FIST developed by participants, the staff worked on formulating the two-day follow-up session for Oct. 72.

One month before the 2-day follow-up, a letter (See Appendix 2) was sent from the project staff to the participants of the training course. Enclosed was a tentative schedule for the follow-up with a request for suggestions. This enabled the participants to actively contribute to their own educational process. Also enclosed was a stimulator list to help the participants generate questions concerning difficulties they found while using the IDEALS Concept on their project(s). The questions were summarized (See Appendix M) and became the foundation for a series of discussion periods during the 2-day session.

Phase IV - Two-day follow-up (Oct 72)

The two-day follow-up was basically a review and problem solving session. Several of the participants gave interim reports on their projects to the entire assemblage. Four small groups, each with a staff consultant, were organized so that each of the participants had the opportunity to discuss, in depth, their particular application of the IDEALS Concept. As a result of these discussions, a previously unanticipated category of outputs was discovered and was used in the evaluation system for the remainder of the project. This category was termed "Incidental Experiences" and concerns the specific ways the participants had applied particular aspects of the IDEALS Concept, who they spoke to about IDEALS, how and if others used IDEALS, etc.

An Activity Checklist (Appendix N) was filled out by the participants to gather more information concerning their activities during the interim period I. The checklist was intended to evaluate participant understanding and to enumerate his/her uses of the IDEALS Concept in real-life situations between the three-week training course and the October follow-up. Questions also considered techniques used by the participants, materials he/she felt were valuable, and reactions of others to the concept. The checklist was, in addition, planned as a pilot to the questionnaire given at the final follow-up.

At some point during the two-day follow-up, each participant was given an individual consultation period of approximately one-half hour with a member of the staff. The consultation period was devoted to helping with the specific problems that were related to each participants' project.

At the end of the two-day follow-up session, the participants were again ranked by a staff member familiar with their abilities. This rating form (See Appendix K) was the result of a pilot ranking scale used during the three-week course, and in its turn, was the basis for a final matrix rating form that was given at the follow-up in February. The rating form was based on 15 questions concerning understanding and the ability of the participants to use the concept. Each question was ranked from a high of 1 to a low of 5. Results were compiled only to investigate the form's applicability.

The last portion of the two-day session was devoted to the design of the FIST for the three-day follow-up, held in February 1973. (See Appendix O)

Phase V - Interim period II (Oct 72-Feb 73)

This phase was essentially the same as the first interim period. The participants were at their own organizational settings and specific consultation was provided via the telephone and/or the mail.

Again combining the evaluation data from the two-day follow-up and the FIST developed by the participants, the staff developed the details of the three-day follow-up. The plan incorporated the new "Incidental Experience" category of results as well as the final reports of the participant projects. To facilitate the three-day planning, letters were sent to the attendees (See appendix P) asking them to help organize the session and to volunteer to give reports and/or talks about their experiences. The intent was to increase the active involvement of the participants in their own education. As a result of their responses, the three-day follow-up was run entirely by the participants.

The previously used pilot rating forms were developed further by the staff into a matrix-rating form (See Appendix Q) that was subsequently used at the three-day. Also the previously used Activity-Checklist was expanded with a set of questions to be used in a taped interview of each participant at the three-day.

Phase VI - Three-day follow-up (Feb 73)

The three-day was basically geared as a wrap-up session. The participants presented their final reports and incidental experiences, worked in small groups to give them further experience in using the IDEALS Concept, exchanged ideas about their individual applications, and formulated plans for future uses of IDEALS.

At the beginning of the three-day, a second comprehension exam (See Appendix R) was given to test the participant's retention of the IDEALS Concept over the six intervening months between Aug 72-Feb 73. The exam was concerned with participant ability to define and place in context, critical aspects of the IDEALS Concept.

In order to find out about the participant activities during the four month interim between the two follow-ups (Oct 72-Feb 73), a questionnaire (See Appendix S) designed from the Activity Checklist given at the first follow-up, was given to the attendees in February. Question were again asked concerning attendee uses of the concept, the ways in which they were accustomed to following the IDEALS design process, and the reactions of others to the Concept. The information gathered proved to be extremely useful since many of the participants used and applied IDEALS in a wide variety of situations in addition to the required individual project. Generally these uses were also categorized as Incidental Experiences and provided a pool of examples of applications of the IC in specific situations.

A follow-up interview at the three-day used the above questionnaire as a starting point. Each participant was interviewed and taped by a staff member on a series of questions (See Appendix T) designed to expand upon his/her projects and other interim activities, their knowledge of and ability to use IC, and their attitudes concerning the IDEALS Concept, the course, and their individual projects.

In an attempt to gain a picture of the participant's ability to apply the IDEALS Concept and their understanding of it, a small group matrix rating form (See Appendix Q) was given to the participants at the three-day follow-up. This form was the result of the two previously discussed pilot rating forms given after theinitial course and the first follow-up. The matrix rating form, in its final state, consisted of 8 criteria (concerning participant understanding of the concept, participant freedom and uninhibitedness of thought, creativity levels reached, adaptability to the problem and situation at hand, and degree of his/her involvement with others and self) on which to rank individuals on a 7-point scale. The form was designed to be used in an actual design work session. Each person was given the form at the beginning of the session and asked to rate each person in the group, including themselves, at some time during the course of the session.

The intent of the form was to gain a group self-perception of the degree to which other members of the group understood and could apply IDEALS in an acutal design session. Further, by making the ratings anonymous and in terms of the group rather than individuals, the intent was to obtain a pciture of how the group perceives itself in terms of an 'average' individual. At the three-day session, there were four design groups, resulting in four separate views of the 'average' person.

The final measure at the three-day was a rating of the participants was made by each of the five staff members where a ten-point scale was used. The ratings were based on the extent to which the participants had "caught on" and were able to use the IDEALS Concept. Two staff members who abilities were known by all raters were given ratings of ten for use as a standard for comparison.

Phase VII - Analysis and preparation of report (Feb. - Dec. 1973)

The data analysis begun during the earlier phases of the project was completed during this phase. Further, to aid in accomplishing the third purpose of the project, it was decided to develop a set of materials,ie, an instructional package. The package incorporates the knowledge gained during the project and the individual contributions of the attendees. It serves the purpose of enabling educators to learn about and apply the system design concepts to educational problems.

As with the other interim periods, consultation via telephone and mail was provided to those participants who continued to apply the knowledge of I.C. they gained during the training portion (Aug 72-Feb 73) of the project.

The program was organized around and by means of the system elements. Evaluation was defined in terms of the control dimension. In order to avoid a chaotic mass of information, this section presents the results in terms of the elements. There is a component break down for each element where the component is considered over the duration of the whole project. The following is a list of the various elements and their breakdowns that can be found in this section.

A. INPUTS

B. OUTPUTS
    1. Attitude Measures
    2. Comprehension
    3. Systems Design Ability
    4. Participants project and Related Information
    5. Incidental Outputs
    6. Discussion

C. SEQUENCE
    1. Course Session Evaluation
    2. Follow-up Design and Evaluation
    3. Recommended Modifications
    4. Workshops Evaluations
    5. Group Project Evaluation

D. ENVIRONMENT & PHYSICAL CATALYSTS

E. HUMAN AGENTS

F. INFORMATION CATALYSTS

A. INPUTS

The inputs to the major system are the participants. The basic controls for these inputs were the participant applications. Organizing the responses to various questions or the applications made it possible for participants to be randomly chosen from each group. Once the selection process was completed and the attendees were chosen, the following chart (Table IIIA) was devised from application responses to form an attendee information source. As can be seen, a wide variety of people were chosen from various fields, experiences,places, sexes,ages, and backgrounds.

Discussion of Inputs

The details on people do not seem to be of much significance in predicting their ability to use the IDEALS Concept (or do system design work). Both the top and bottom of the range of participant ability were composed of similar input types; e.g., teachers in high and low, superintendents in high and low.

Probably of more importance than the details in Table III A are the values and assumptions that the inputs have when they enter and to what degree these correspond to those of the IDEALS Concept. Consequently the question of how to teach people comes to the fore in any subsequent project.

B. OUTPUTS

The output element is one of the most helpful elements of the major system for evaluatory measures. A large variety

Table III A Attendee Information Chart

Name	No.	Age	Degree Yr. of degree	Experience	% time spent on: Teaching	Research	Administration	Procedure Development	Dissemination	Home State	Title or Position	Direct Project? % time spent % contribution
Albertine, J.	002	27	J.D. 1970	2 mo.	00	50	00	50	00	Ill.	Attorney	No -- --
Bowersox,P.	075	35	M.Ed. 1965	4 yrs	0	10	40	40	10	Md.	Super. of Fed. Progs	Yes 10 75
Bozeman, B.	023	28	M.Ed. 1971	5 yrs	30	20	30	17	03	Ga.	Fed. Prog. Dir.	Yes 40 25
Dahl, T.	025	56	Ph.D. 1954	20 yr	25	25	50	00	00	Or.	Dir. of Con. Ed.	No
Dingle, R.	060	46	M.S. 1959	17 yrs	70	20	10	00	00	Ark.	Asso. Prof. of Math	Yes 20 90
Ebbert, M.	051	41	Ph.D. 1964	1 yr.	00	00	30	70	00	Ind.	Dir. Ed Res. & Campus Planing	Yes 100 65
Gomez, P.	022	42	M.S. 1956	16 yrs	00	10	70	15	05	N Mex.	Dir. of Inst.	Yes 05 70
Goodman, J.	074	47	M.A. 1953	5 yrs	00	00	50	30	20	Calif.	Coord. learning center	Yes 100 100
Hatala, H.	019	40	M.Ed. 1964	8 yrs	70	10	00	15	05	N.J.	teacher	No
Jahelka, R.	072	41	M.A. 1962	17 yrs	10	15	50	15	10	Calif.	Principal	Yes 50 80
Maestas, L.	100	27	M.A. 1968	2 yrs	02	02	84	02	10	N Mex.	Dir. of Supportive services	Yes 40 40
Mansfield, R.	048	50	M.A. 1961	7 yrs	00	05	95	00	00	Calif.	Principal	Yes 20 50

Table III A (cont.)

Mansfield, H.	061	56	M.A. 1965	7 yrs	00	05	95	00	00	Fla.	V.P. of Student Affairs	Yes -- --
McDonald, J.	016	45	D.Ed. 1967	10 yrs	05	10	75	05	05	Calif.	Super.	Yes 25 50
McGrew J.	018	50	D.Ed. 1965	14 yrs	00	10	70	10	10	Calif.	Super.	Yes 20 60
Meeks, B.	033	40	Ph.D. 1971	10 yrs	00	10	50	15	10	La.	Asst. Super.	Yes 10 60
Montano, M.	013	53	M.S. 1960	--	00	00	100	00	00	Calif.	Dist. Super.	Yes 100 50
Norton, M.	064	54	M.A. 1950	4 yrs	40	15	05	35	05	Calif.	Chrm. Eng. Dpt.	Yes -- --
Salch, D.	029	27	M.B.A. 1969	1 yr	30	00	70	00	00	Ill.	Asst.Dir. Bus. & Fin.	No
Swanson, M.	092	56	M.A. 1951	3 yrs	40	05	50	03	02	Minn.	Prof. of philos.	Yes 05 05
Swenson, L.	020	54	D.Ed. 1959	10 yrs	00	05	50	50	05	Calif.	Fed. Projects Admin.	No
Whittacre, F.	073	46	D.Ed. 1965	6 yrs	25	10	65	00	00	Tenn.	Chrm. of Dept. of Ed.	Yes 15 50
Younger, D.	052	38	M.Ed. 1966	6 yrs	05	10	10	60	15	Md.	Super.of Curr. Dev.	Yes 75 --

of information can be categorized under outputs. The first of these categories is called Attitude Measures. Information for this comes from pre and post tests, the weekly questionnaires, and the final follow-up interview. Comprehension, a second category was measured from two knowledge exams, and the weekly questionnaires. The Systems Design Ability of each participant was assessed using a series of three pilot matrix rating forms as well as the final staff Ability to Use rating. The category of Participant Projects and Related Information includes information acquired through the various course projects, questionnaires at the two follow-ups and the final follow-up interview. The final category is Incidental Outputs, including information on feelings, reactions and experiences gathered at both follow-ups.

Interrelationships between the above categories can be found at the end of this section along with conclusions concerning them, the entire outputs package, and their relationship to the project objectives.

1. Attitude Measures

Several attitude measures were given during the project to evaluate changes in the participant reaction to aspects of the concept and course. The first of these was a set of pre and post attitude exams given at the beginning and end of the 3-week training course. The pre-tests were given to the participants to determine their baseline level on the following creativity and rigidity scales:

1. The Gough-Sanford rigidity scale
2. The Davis creativity attitude scale
3. The Davis creativity inventory scale
4. The Edwards PPS achievement scale
5. The Rotter internal-external control scale

At the end of the training course identical attitude tests were given to the participants. The differences in the pre and post scores were calculated; the mean and standard deviation were found. In order to determine if these numbers were significant, a correlated 2-tailed t-test with $\alpha = .05$ was run on the results. This led to a significant change in three of the five categories, rigidity, creative attitude, and creativity, shown in Table III B. The average % change for each was -

(a) Rigidity $\wedge$ 5/72 = 6% change
(b) Creative Attitude $\wedge$ 4/100 = 4% change
(c) Creativity $\wedge$ 2/20 = 10% change

Table III B

CORRELATED t - TESTS BETWEEN PRE AND POST MEASURES

Measure	Mean difference	S.D.	Obtained t	Significance
Rigidity	-5.0435	7.4315	-3.2548	0.01
Creativity attitude	3.8261	7.5658	2.4153	0.05
Creativity	2.3478	3.1277	3.6600	0.002
Achievement	.1739	.1739	0.2757	none
Internal-External	- .3478	- .3478	- .5945	none

Since there was a significance change on three of the attitude measures a λ^2 on these significant factors was run for a test of association between measures. Each measure was divided into high (above the mean) and low (below the mean) scores. A series of 2X2 λ^2 were calculated[1] for $\alpha = 0.05$ a two-tailed test with 1 degree of freedom. Results can be seen in Table III C

Table III C

Measures	χ^2
Rigidity Vs. Creativity Attitude	0.00034*
Rigidity vs. Creativity	0.05662
Creativity Attitude vs. Creativity	2.38165

Since χ^2 tests test only the independence vs. dependence of the variables involved, a symmetric strength of association[2] was calculated for the significant λ^2, Table III D

Measure	λ
Rigidity vs. Creativity Attitude	0/18 = 0.0

---

* significant at $\alpha = 0.05$

[1] the formula used for $\lambda^2 = \dfrac{N\,(|ad - bc| - N/2)^2}{(a+b)\,(c+d)\,(a+c)\,(b+d)}$

[2] the formula used for

$$\lambda = \frac{\sum_{j}\max_{k} f_{ij} - \sum_{k}\max_{j} f_{jk} - \max_{k} f_{.k} - \max_{j} f_{j.}}{2N - \max_{k} f_{.k} - \max_{j} f_{j.}}$$

The training program stressed concepts whichmake it difficult for an individual using those concepts to be either rigid or non-creative. For example, to design a system using IDEALS, it is difficult to remain rigid when the first step of the strategy requires that one must expand the purpose. Also it is difficult to score low on a creativity test when all of the steps in the design strategy call for brainstorming, when some steps call for listing ultimate systems to accomplish the selected purpose, when some steps emphasize group involvement to generate more and better ideas, and when some steps emphasize generating alternative ways of accomplishing the purpose. In short, IDEALS training includes becoming less rigid and more creative in finding solutions to specific problems.

Thus, given the various scales are reliable, it seems the training program did, on the average, reduce the rigidity and increase the creative attitude and creativity of the participants.

At the end of the three-week training session another attitude measure was taken. Participants were asked two questions concerning (1) their belief in their ability to teach others IC, and (2) whether they thought that knowledge of IC would influence their work and thought processes. Of the 16 participants responding on a scale from 1 to 7, they rated themselves a mean 4.56 ability to teach others, particularly within their organization.

The second question was asked at the final follow-up. Participants were questioned as to how they thought and acted differently as a result of participating in the project. Responses and frequency counts of the two questions follow:

ATTITUDE CHANGES

End of three-week course

What changes do you anticipate in the way you will work and think as a result of attending this course?

1. More attention to functions and function expansion (4)
2. Broader involvement with those concerned (7)
3. Less procrastination and more efficient use of time (4)
4. Better solutions and more encompassing systems (6)
5. "The main breakthrough is that I hope I will be able to encourage my associates to consider 'what ought to be?' instead of 'what can we do about this problem?'"

Three-day follow-up session

How do you think and act differently as a result of participating in the project?

1. Thoughts are more often directed to function (7)
2. Decisions are arrived at much quicker (4)
3. Problem solving with a direction, a positive approach (4)
4. Thoughts are more logically organized (7)
5. He/she produces more creative approaches in problem solving (7)
6. Greater willingness to work with other people (3)
7. No limitation to using only research for problem solving (2)

In both responses similar ideas are brought up concerning an improvement in organization, efficiency, and direction.

Similar responses also obtained when, at the final follow-up participants were asked if they had obtained better results using IDEALS and why. Twenty-two said they had had better results and one said that his results were the same as those obtained using his conventional strategy. The reasons for better results were:

1. The techniques greatly aid the design process. Mentioned especially were function expansion (5), and the matrix (1).

2. With IDEALS, organization of the group/committee was improved (3).

3. Greater speed and efficiency (4).

4. It is easier to grasp the problem and see to its needs immediately (10).

5. There is true involvement of people with IC (9).

6. Many more diverse ideas are produced using IC (4).

2. Comprehension

Comprehension was measured throughout the three-week course. Participants were aksed on the weekly evaluations to comment on their understanding of what was going on in the course. The purpose of this was to aid staff in scheduling and rescheduling the course in order for the course to fulfill its purpose to educate, as well as illustrating education as a dynamic process. At the ned of the third week, the participants were asked whether their expectations of the IDEALS Concept and the course had been met.

By the end of the first week, most participants confessed they were confused. 11/23 people claimed some degree of understanding, although they were bewildered, especially by the terminology. At the finish of the second week, 13/21 participants claimed average understanding, five felt they had a good grasp on the concept, andone felt he/she had none. Two participants had no comment on the matter. The following quote seems to summarize the general feeling: "From total confusion, progress has been made to semi-confusion."

When the training course was finsished, to 3-weeks, 9/16 attendees said that they had definitely learned a totally new design system. The rest of the participants felt they had acquired a working knowledge of many aspects of the IDEALS Concept. (According to IDEALS philosophy, when there is no definite format--the knowledge and use of any aspect of IDEALS is simply the concept.) All participants planned to use IDEALS

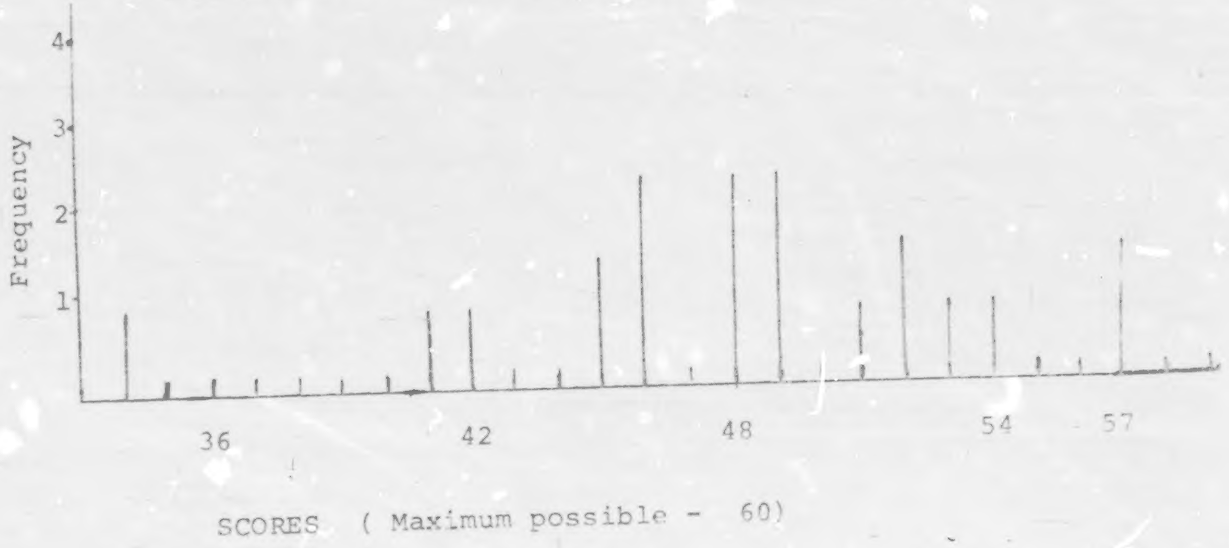
At the end of the three-week training course, the participants were also given a knowledge exam I. The exam contained both subjective and objective questions concerning definitions, the sequence of steps, and IDEAL responses to a given situation.

An item analysis of the knowledge exam I yielded a reliability of 0.6021 and the following summary statistics:

Mean	47.7
Meadian	48.0
Standard Deviation	5.8

Graph IIIA shows the frequency distribution of the scores ranging 34 to 57. Everyone in the training course surpassed the 50% mark.

Graph IIIA
Frequency Distribution of Scores for knowldege Exam I



An item analysis of the exam revealed several cases where participant response was evenly distributed over the possible answers. This indicated confusion concerning the question, i.e, poor questions. Responses to these questions were not recorded as a result, consequently a maximum score of 60 was given instead of the original 71.

Analyzing participant comprehension of the various aspects of IDEALS as well as the success of the teaching methods was done by compiling average scores for each question. On the Knowledge Exam I questions were asked concerning the seven following factors. An analysis of the average scores reveals that of the seven factors there was confusion only on the formulation of the FIST.

Factor	Average Score	Percentage
Elements	3.14/4	78.5%
Dimensions	2.52/3	84.0%
FIST	1.76/3	58.7%
Information Gathering	2.71/3	90.3%
Function Determination	3.14/4	78.5%
Difference between IC and non-design strategies	1.76/2	88.0%
General overview of IDEALS	7.52/10	75.2%

The second knowledge exam II, given in February to calculate knowledge retention, was scored independently by two staff members using nine factors on a scale from 1 (low) to 7. The rating factors were:

(1) Understanding of system matrix elements

(2) Understanding of system matrix dimensions

(3) Understanding of system matrix--purpose

(4) Understanding of function; expansion and hierarchy

(5) Understanding of system types

(6) Understanding of regularities

(7) Understanding of minimum limitations

(8) Understanding of difference between conventional strategy and IDEALS

(9) Understanding of purpose of groups in design

A rating grid, Table III E contains participant scores for each question as well as participant variance and their average. The mean score for the exam was 4.34 out of a possible 7, with a variance of 1.46. The distribution of scores ranged from 1.55 to 6.11.

TABLE III E

Rating Grid of Knowledge Exam II

Participant	1	2	3	4	5	6	7	8	9	Av	Var
1	7.0	7.0	6.5	5.5	6.0	6.0	5.5	6.0	5.5	6.11	.36
2	7.0	7.0	6.0	5.5	6.0	6.5	5.5	5.5	6.0	6.11	.36
3	4.5	1.0	5.5	5.5	4.5	4.5	4.0	3.5	6.5	4.37	2.42
4	7.0	6.5	4.5	5.0	5.5	3.5	4.5	6.0	5.5	5.33	1.19
5	5.5	1.5	4.0	5.0	3.5	5.0	3.5	1.0	3.5	3.61	2.36
6	7.0	7.0	6.0	5.0	5.5	6.5	6.5	6.0	6.0	6.16	.44
7	3.5	1.0	1.5	4.0	4.0	4.5	4.5	3.5	4.5	3.44	1.72
8	6.5	7.0	3.0	4.5	4.5	4.5	3.5	5 0	6.0	4.44	1.78
9	5.5	3.0	5.5	4.5	5.5	6.5	5.5	5.0	6.0	5.22	1.01
10	4.5	4.0	4.0	3.0	3.5	4.0	4.0	4.5	5.0	4.05	.34
11	2.5	1.0	6.0	5.5	4.0	6.5	5.0	5.0	1.0	4.05	4.34
12	4.5	5.0	6.5	4.5	4.0	5.0	3.0	4.5	5.5	4.72	.94
13	4.0	5.0	5.0	4.0	4.5	5.0	4.5	4.0	5.0	4.55	.22
14	2.5	2.0	4.0	3.5	4.0	4.0	4.0	4.0	5.0	3.66	1.50
15	5.0	7.0	2.5	5.5	4.5	5.5	4.0	6.0	4.5	4.94	1.65
16	1.0	1.0	4.0	2.5	1.0	1.5	1.0	2.5	4.0	2.05	1.59
17	4.5	2.5	5.0	5.0	4.5	6.0	4.5	5.0	5.5	4.72	.94
18	5.5	5.5	6.0	4.0	3.0	3.5	3.0	5.5	3.5	4.38	1.49
19	6.5	4.5	6.0	4.0	4.5	5.0	4.0	5.5	5.5	5.05	.78
20	5.5	3.5	6.0	3.5	3.5	7.0	6.5	5.0	6.5	5.22	2.01
21	3.0	1.0	4.5	4.5	4.5	5.0	3.5	3.0	4.0	3.66	1.50
22	1.0	1.0	3.0	2.5	2.0	2.0	4.0	3.0	4.0	2.50	1.25
23	1.0	1.0	1.0	1.0	1.0	1.0	1.5	3.0	3.5	1.55	.96
AVERAGE	4.54	3.70	4.61	4.24	4.06	4.72	4.15	4.43	4.87	4.34	.13
VARIANCE	3.77	5.92	2.48	1.36	1.37	2.63	1.67	1.76	1.62	1.46	

Table III F contains information on average scores and the variance from participant to participant of each factor on Knowledge Exam II.

Table III F Component Evaluation of Knowledge Exam II

Factors	Exam Question	Mean Rating	Variance
Understanding of:			
(1) system elements	1,a	4.54	3.77
(2) system dimensions	1,b	3.70	5.92
(3) the purpose of the sytem matrix	2	4.61	2.48
(4) purpose, purpose expansion & the hierarchy of purposes	3,4,5 6 & 7	4.24	1.36
(5) system types	8 & 9	4.06	1.37
(6) design regularities	10 & 11	4.72	2.63
(7) minimum limitations on the design	12 & 13	4.15	1.67
(8) differences between conventional & the IDEALS Strategies	14	4.43	1.76
(9) purposes in using groups in design	15	4.87	1.62

Table III G contains the factors found in both exams and the average scores. The amount of participant retention of the concepts of IDEALS can be comparatively found. Knowledge of the elements, function determination, and system types (FIST), the basis of IDEALS remained relatively the same while others decreased. While the discrepancy may indicate a large loss of knowledge, that is not necessarily true. All of the participants were using IDEALS for various projects; thus their working knowledge of IDEALS did not include the specific deformations found in the examination.

Table III G

	Exam I		Exam II	
FACTOR	Score	Percent	Score	Percent
Elements	3.14/4	66.5	4.54/7	65.0
Dimensions	2.52/3	83.9	3.70/7	52.9
Function Determination and Expansion	3.14/4	66.5	4.24/7	60.6
Difference between IC and conventional strategies	1.76/2	88.0	4.43/7	63.3
FIST and other system types	1.76/3	58.6	4.06/7	58.1

3. Systems Design Ability

Another factor which is important in evaluating the project, is the resulting participant systems design ability. This refers to their ability to use the concept in a practical application rather than their ability to memorize and list the definitions and/or sequence of IDEALS. A decision was made to use various ratings to determine participant ability to use. There were three pilot ratings, each influencing the next, and a fourth, final rating.

The first rating, Matrix Rating I, was a subjective ranking scale completed at the ned of the 3-week training course for each attendee by a staff member acquainted with their abilities. Participants were rated with a 7 point scale, on their understanding of and ability to use the principal steps as well as the overall concept. The eleven factors on the matrix were as follows:

1. Understanding of "function"
2. Understanding of and ability to use function expansion
3. Understanding of and ability to determine limitations and regularities
4. Understanding of the FIST
5. Understanding of the function of the various steps and techniques involved in the IDEALS Concept
6. Overall understanding of the IDEALS Concept
7. Overall ability to use the IDEALS Concept
8. Ability to utilize the concepts underlying the IDEALS Concept systems
9. Degree to which the interim report reflects any change in the individual's conceptual approach to systems design
10. Understanding of purposeful activities and that different strategies are used for each
11. Ability to integrate specific ideas of outside speakers

Results are listed by participant in Table III H. The distribution range of scores was from 1.90 to 5.50 out of a possible seven.

The second rating was given at the first (two-day) follow-up. Participants were rated by staff members they had worked with during the follow-up on a 5-point scale. The fifteen factors on the rating were not specifically concerned with the techniques of the concept, as on the first rating. They pertained to participant attitudes as a reflection of their knowledge of IDEALS. A representative few are:

1. Person takes a more macro or broad view of problem situations
2. Person sees fewer restrictions and ways to overcome limitations
3. Person treats others as human agents in problem solving rather than objects to be manipulated

TABLE III H

PARTICIPANT RATING AFTER THE TRAINING COURSE

Participant	Understanding of IC (7)	Ability to Apply IC (3)	Total (10)
1	5.42	5.67	5.50
2	5.42	5.00	5.30
3	3.71	3.00	3.50
4	4.71	5.00	4.80
5	4.28	4.66	4.40
6	4.14	4.00	4.10
8	3.85	3.33	3.70
9	4.00	3.67	3.90
10	2.14	1.33	1.90
11	5.00	5.67	5.20
12	4.71	5.33	4.90
13	3.85	3.33	3.70
14	4.14	3.33	3.90
15	3.85	3.33	3.70
16	3.28	3.33	3.30
17	2.71	2.33	2.60
18	5.14	5.00	5.10
19	4.14	4.00	4.10
20	3.14	2.00	2.80
21	2.43	2.67	2.50
23	4.57	5.00	4.70

4. Person has tendency to look for what is required to solve a problem rather than being inhibited by status-quo concepts
5. Person recognizes that a design strategy is needed on less well defined problems requiring a specific solution for a specific circumstance
6. Person views self as change agent rather than manager or controller
7. Person does not get so ego involved with a particular solution that he loses sight of the problem or function.

Results were not calculated for this second matrix rating form. But, questions were evaluated and served as a basis for the Group Matrix Rating Form.

The third rating form and the final staff ratings were given at the 3-day follow-up. Instead of ranking individual participants, this third rating was scored within working groups. Each member of the group rated himself, as well as other members, with the intent of giving the staff an idea of group self-perception. Seven of the eight questions used were from the second matrix form.

A mean and variance was found for each question within the rating groups (see Table III I). Total means were found for each group. Averaging all the data and not confining it to groups, led to a mean score on every question for the entire group of attendees.

As can be seen, the participants rated themselves relatively high on the average. Each group contained a staff observer who evaluated the rating process. A discussion by the staff following the ratings, resulted in a consensus that the group ratings on an average were too high. The reasons for these discrepancies are not at this point apparent, but the road is open for many hypothesis and experiments to investigate self-evaluation in training programs.

The final measure on participant ability to use IDEALS, based on the previous three ratings, was a rating on individual participants by five staff members. The rating used a ten-point scale, where two staff members, whose ability to use IDEALS was known to all raters, were given a rating of 10 for comparison purposes. The staff members were asked to rate the participants according to the extent to which they "caught on" and were able to use the IDEALS Concept as of the three-day follow-up. In essence, the raters combined their subjective information concerning allprevious rating criteria, and their observations of the individual participants throughout the project, to come up with a single rating for each attendee.

To determine the similarity among the five raters, Kendalls coefficient of concordance W was calculated, giving a high degre of concordance $\left(W = \frac{12 \sum T_j^2}{m^2 n(n^2-1)} - \frac{3(n+1)}{n-1} = 4.05 - 3.27 = .78\right)$.

TABLE III I GROUP RATINGS
AT FINAL FOLLOW-UP

RATING CRITERIA	A		B		C		D		TOTALS Groups ABCD		ATTENDEE TOTALS	
	Mean	Var.	Mean	Var.	Mean	Var.	Mean	Var.	Mean	Var.	Mean	Var.
1) Degree to which the person has an understanding of IDEALS concept	4.57	3.47	4.60	1.5	4.64	1.87	5.22	1.09	4.76	.095	4.80	1.83
2) Degree to which the person takes a more macro view (emphasizes higher level functions) of problem situations.	4.68	3.78	4.46	1.14	4.50	1.65	4.91	1.10	4.64	.042	4.64	1.69
3) Degree to which the person sees fewer restrictions and sees ways to overcome limitations.	4.47	3.15	4.57	1.21	4.55	1.64	5.02	.99	4.65	.062	4.69	1.59
4) Degree to which the person knows when to be general and when to be specific.	4.31	1.89	4.39	0.83	4.58	1.46	4.61	1.84	4.47	.021	4.50	1.47
5) Degree to which the person has a lack of defensiveness (High degree = lack of defensiveness)	3.84	2.47	5.03	2.03	5.38	2.06	4.33	1.88	4.64	.479	4.72	2.33
6) Degree to which the person has the ability to concentrate on other's ideas and not on their personalities.	4.10	2.54	4.75	1.60	5.70	1.72	5.30	1.41	4.96	.482	5.09	1.99
7) Degree to which the person treats others as human agents in problem solving rather than as objects to be manipulated.	4.26	1.42	5.17	2.30	6.00	1.93	5.02	1.39	5.11	.455	5.22	2.07
8) Degree to which the person does not get so ego involved with a particular solution or limitation that he/she loses sight of the problem or function. (High degree = not egotist)	3.94	2.26	4.96	1.81	5.26	1.65	4.55	2.53	4.68	.326	4.76	2.26
MEAN	4.27		4.74		5.08		4.87		4.74		4.55	0.13
VARIANCE	2.62		1.58		2.00		1.60		.118		0.12	

To interpret this value, the average r_s (Spearman's Rho) was calculated $\left(r_s = \frac{mW-1}{m-1} = \frac{5(.78)-1}{4} = .725\right)$. Thus for 5-10 possible pairs of raters, on the average they would correlate at .725 which is relatively high. The various staff ratings are listed by staff member with the average and resulting participant rank order in Table III J.

Table III K, shows staff rankings of the participants, the total (for 5 staff members), and the resulting rank of the total. Note the two ranks, found through different methods, are not completely identical, however eleven of the 23 are identical and sixteen of the 23 were within 1.0 of each other. The average rating found per participant was 6.11 (out of a possible 10). Thirteen of the 23 participants were above the mean and ten were below.

Because of the high degree of concordance between the raters, and the amount of work spent in perfecting the technique of the rating, the ranks found were used as a basic project measure and were used in various comparative manners.

Participant Projects and Related Information

One of the anticipated methods of evaluating the project, defined before the couse began, was with participant projects. At the final follow-up, 20 of the assigned projects had been completed. Four were presented to the attendees for discussion and as a review of the concept.

The completed projects, as well as those in progress, fell into four basic categories, with one exception: 1) Fiscal and Organizational designs (6), 2) Management designs (5), 3) Curriculum designs (6), and 4) Improving the use of existing systems (5). The exception was an architectural design of a university club. The following page, Table III L, details the various titles of the projects, located under their respective heading.

Some participants also completed more projects than the one assigned. Graphs III B and III C illustrate the frequencies of such projects accoring to responses on the questionnaire givenat the final follow-up. Among 23 people, with one project required, 51 projects were completed leaving a mean of 2.22 projects and a variance among the participants of 3.80. Fourteen of the 23 (60.86%) then, did greater than or equal to twice the number of projects required. Three of the 23 (13.04%) did none at all.

Some of these additional projects were related to participant's work or organization. But, others were the results of creativity on the part of the attendee. A list of the various non-work related projects (using IDEALS) described by the participants follows:

TABLE III J

RATINGS ON ABILITY TO USE IC AS DETERMINED BY STAFF

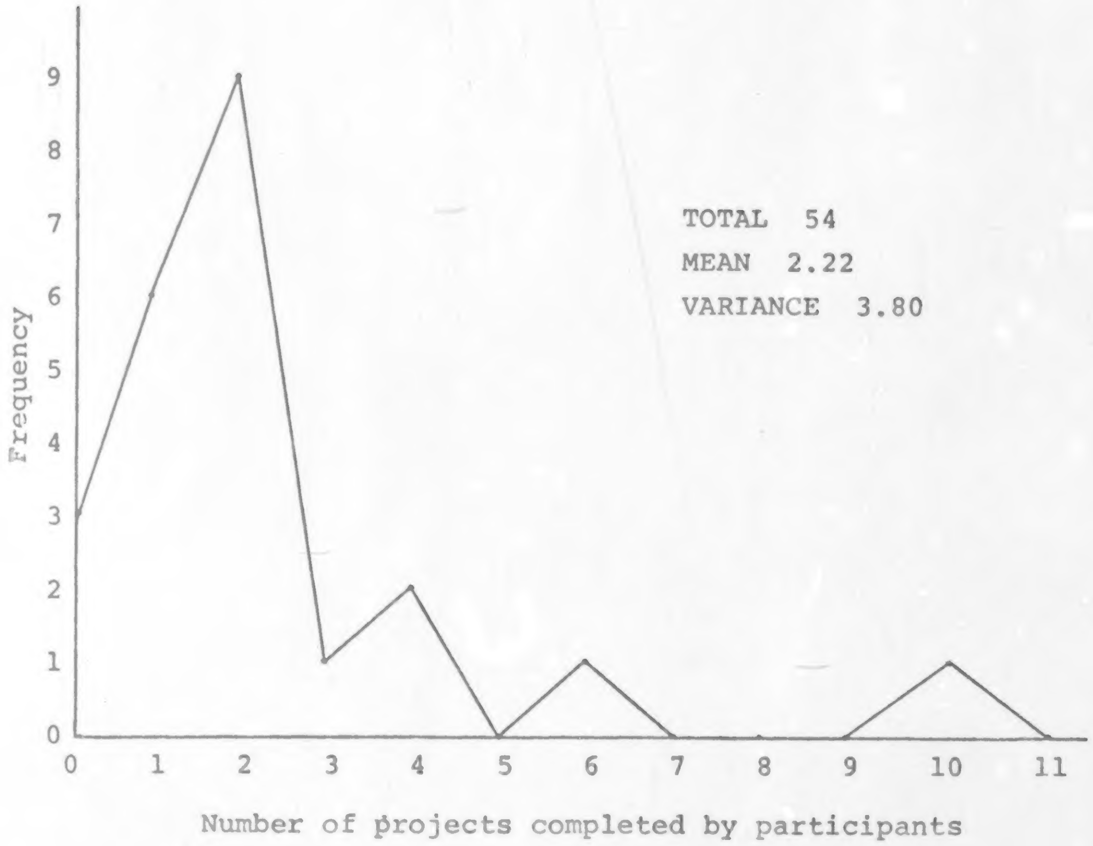
Participant	Staff Evaluators					Ave.	Rank Order
	J.C.T	R.K.S.	J.V.S.	G.N.	J.J.		
1	9.3	9.5	10.0	9.2	10.0	9.60	23
2	9.1	9.4	9.5	8.5	9.2	9.14	22
3	7.8	9.2	9.9	9.0	8.5	8.88	21
4	8.4	8.7	9.2	7.7	9.5	8.70	20
5	8.5	8.4	9.0	7.5	9.9	8.66	19
6	6.4	8.2	8.7	7.2	7.4	7.58	18
7	8.0	6.5	7.1	6.2	7.5	7.06	17
8	6.8	8.5	8.2	4.5	6.2	6.84	16
9	5.7	7.5	6.0	7.0	7.6	6.76	15
10	3.8	8.3	7.0	6.7	7.7	6.70	14
11	5.8	7.0	6.8	5.5	7.9	6.60	13
12	7.0	6.3	7.2	4.0	8.2	6.54	12
13	6.5	4.5	5.8	6.0	8.1	6.18	11
14	3.5	6.0	4.9	6.5	5.8	5.34	10
15	5.0	6.7	4.5	4.2	4.0	5.28	9
16	2.7	5.0	5.0	5.2	7.8	5.14	8
17	2.3	2.5	6.3	5.0	8.4	4.90	7
18	3.2	2.7	5.5	4.7	7.2	4.66	6
19	4.8	2.0	6.6	3.0	6.0	4.48	5
20	4.6	1.5	6.5	2.0	3.0	3.52	4
21	1.3	4.0	3.0	2.5	6.4	3.44	3
22	2.4	1.1	2.0	3.5	4.2	2.64	2
23	1.0	1.0	1.0	1.8	5.2	2.0	1

TABLE III K

RANK ORDERS OF RATINGS ON ABILITY TO USE IC

	J.C.T.	ROSE	J.V.S	G.N.	J.J.	TOTAL	RANK ORDER OF TOTAL
1	23	23	23	23	23	115	23
2	22	22	22	21	20	107	22
3	18	21	21	22	19	101	20.5
4	20	20	20	20	21	101	20.5
5	21	18	19	19	22	99	19
6	14	16	18	18	10	76	18
7	19	12	15	14	11	71	17
8	16	19	17	8	7	67	14
9	12	15	9	17	12	65	12
10	8	17	14	16	13	68	16
11	13	14	13	12	15	67	14
12	17	11	16	6	17	67	14
13	15	8	8	13	16	60	11
14	7	10	5	15	5	42	8
15	11	13	4	7	2	37	6.5
16	5	9	6	11	14	45	9
17	3	5	10	10	18	46	10
18	6	6	7	9	9	37	6.5
19	10	3	12	4	6	35	5
20	9	4	11	2	1	27	4
21	2	7	3	3	8	23	3
22	4	2	2	5	3	16	2
23	1	1	1	1	4	8	1

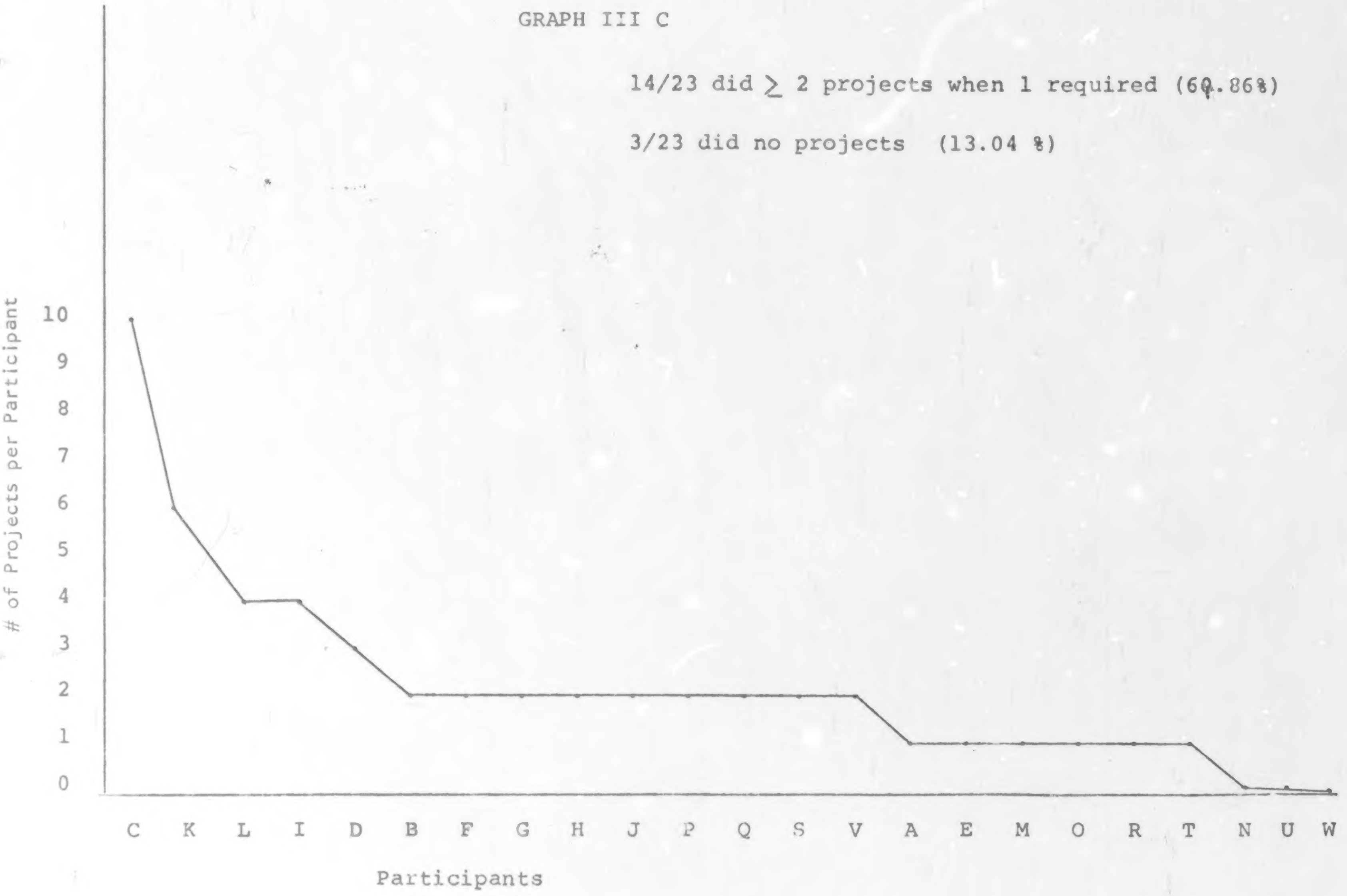
GRAPH III B


TOTAL 54
MEAN 2.22
VARIANCE 3.80
Frequency
0
1
2
3
4
5
6
7
8
9
0
1
2
3
4
5
6
7
8
9
10
11
Number of projects completed by participants

GRAPH III C

14/23 did ≥ 2 projects when 1 required (60.86%)

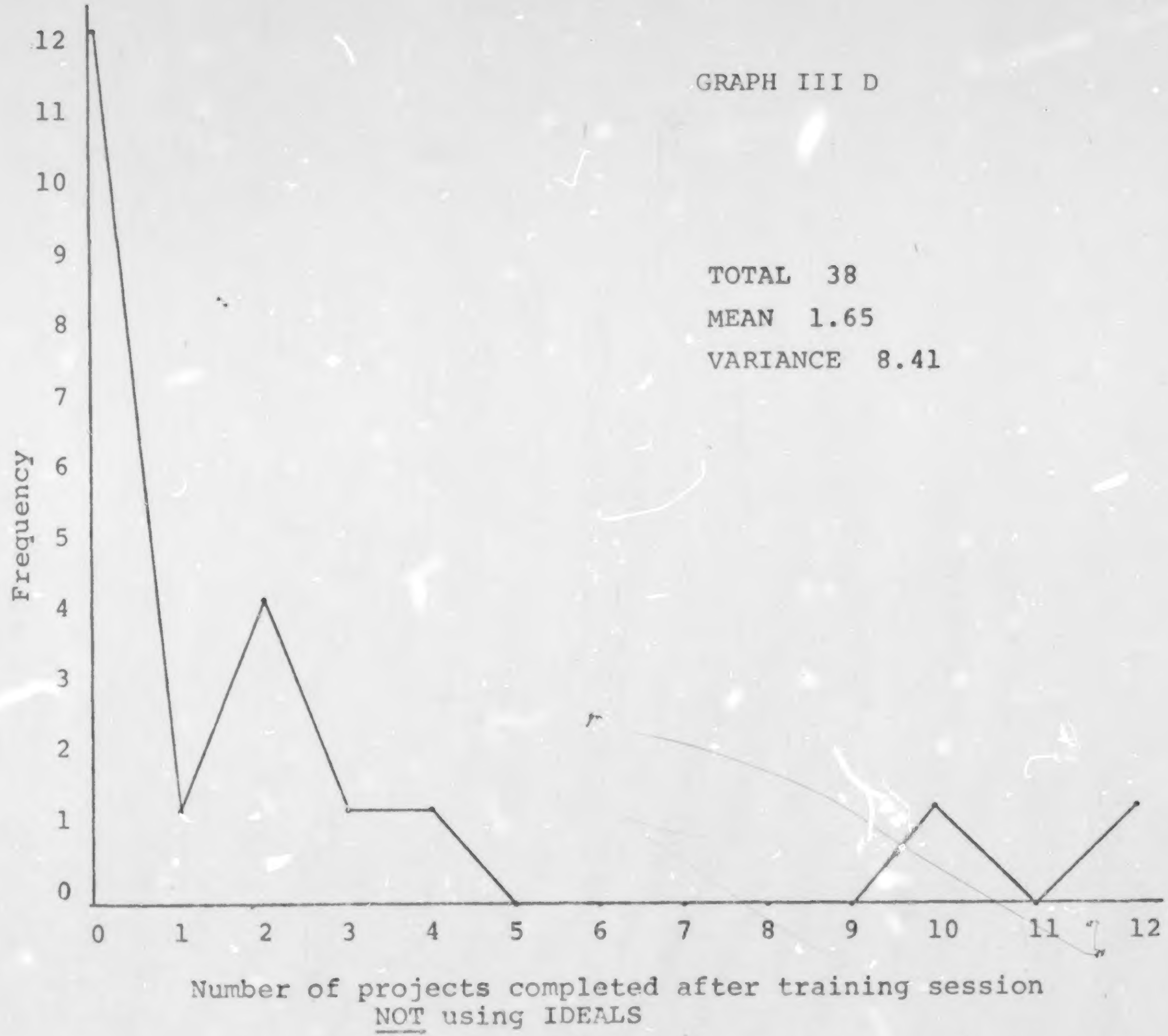
3/23 did no projects (13.04 %)



1. Use in day-to-day decisions
   How to spend money earned (2)
   Organizing one's general thought process (2)
2. Use IC to organzie church council meetings, change the order of worship, and aid planning in the building committee.
3. Use of IDEALS as Ditch Commissioner to organize the rationing of irrigation water.
4. Use of IDEALS in the selection and awarding of trophies at a Yacht Club.
5. Use of IDEALS to set up a school board election system.
6. Use of IDEALS in outlining a paper (2).
7. Use of IDEALS in applying for a job, to convince the posers that one is a worthwhile employee.
8. Use of IDEALS in formulating off-the-cuff plans with friends (2).
9. Use of IDEALS in planning TV programs.

The attendees were also asked at the final follow-up, how many projects not using IDEALS they ahd completed since the training course. Frequencies are illustrated in Graph III D. The mean number of such projects was 1.65 which is .57 less than the mean number of projects completed using IDEALS. The variance was 8.41 indicating a broad spread (as opposed to those using IDEALS with a variance of 3.8). Twelve of the 23 (52.17%) had completed no projects other than those using IDEALS. This information points out, as do the details illustrated on graphs III B,C, and D, that the participants preferred IDEALS to their former (if any) design methodology. As one attendee put it, "I think now that with any projects that I approach, that I would try to use at least some facets of the IDEALS system." One attendee, participant 1 , was pleased with his results. "Itls made me that much more creative because creativity is after all basically realizing that no matter what you confront, if you have more than one option, you are creative at least to that degree. If you have five options you are far more creative than if you only have two. So creativity is realizing that in any given human situation a number of options are open to you...IDEALS is not only itself an option that I didn't have before, but in turn it stimulates creativity because it demands the development of options every step of the way and consciously does this."

GRAPH III D



TOTAL 38
MEAN 1.65
VARIANCE 8.41

Data concerning the techniques used by the participants on their various projects was compiled. Table III M lists various techniques considered critical in the use of IDEALS and frequencies. The final follow-up categorized the question according to the various times the techniques were used (i.e. on the assigned project or on other projects). It also shows frequencies of those techniques that others found useful and not useful.

Techniques that the participants felt did not aid them in their various projects were:

1. group processes (1), because of job limitations (lawyer)
2. element expansion (3)
3. decision matrix (2)
4. feasible ideal system (as opposed to FIST) (3)
5. minimum limitations (3)
6. broad statements of ideals (1)
7. design matrix (3)
8. no techniques used other than the general philosophy and general concepts of IDEALS (2)

The basic reason given by the pariticpants for finding these techniques not useful was that they were not necessary in designing particular systems, especially when given a time limitation (particularly mentioned were #s2, 3, 6, and 7). Several attendees added that they used these techniques only when they found a need. Comparing these techniques to the techniques that others felt were not useful shows similarities in the two lists (element expansion, ideal systems, minimum limitations, and the matrix). One reason for this could be that participants, when speaking to others, let their prejudices against certain techniques be known. Another reason could have been that the participants simply didn't mention the technique or couldn't explain it clearly.

A partial summary of the data in this sub-section can be seen in Table III N. Responses to the indicated questions are itemized for each participant. The information presented indicates the high level of use the participants found with IDEALS, fulfilling objective #1 (To prepare educational professionals for the role of utilizing the IDEALS Concept in educational curriculum and program development). The relatively high frequency of usefulness others found in IDEALS indicates initial progress toward the fulfillment of objective #2. (To educate professionals involved to the point where they can educate others in their own organization to carry out the ideas).

5. Incidental Outputs

A final category of outputs, called incidental outputs, was encountered at the first follow-up. Participants began talking about their experiences with IDEALS; how they used it, who they spoke to, what others reactions were, and how others had used it. Specific questions concerning these areas were therefore asked on questionnaires at both follow-ups. It was found that such information could be related to participant knowledge and ability to use the concept.

TABLE III L

DESIGN SYSTEMS ACCORDING TO SUBJECT

FISCAL AND ORGANIZATIONAL DESIGNS	MANAGEMENT DESIGNS	CURRICULUM DESIGN	IMPROVING USE OF EXISTING SYSTEMS
A 1) System for money allocation to identify service areas. Younger	B 1) System for advising students at University Whittacre	C 1) Media System for JHS for communication skills. Swenson	D 1) Improved Curriculum for Primary School Bozeman
A 2) Design Federal Programs Office to provide for educational needs of all children utilizing special funds. Bowersox	B 2) Hearing procedures for school issues involving students such as expulsion Albertine	C 2) Language Arts Curric. Jr. H.S. Norton	D 2) Principals performance evaluation - to prescribe corrective measures Burce Meeks
A 3) Space utilization and reorganization due to changing community. Montano	B 3) Decision-making management information system for Illinois community Colleges. D. Salch	C 3) Designing communication arts curriculum at H S Hatala	D 3) Motivation of secondary school students (and teachers) McGrew
A 4) Design of planning system that will culminate in construction of secon H. S. in Fallbrook Union HS District J. C. McDonald	B 4) Teacher aid orientation system. Maestas	C 4) Food Service Education system for a H. S. R. L. Mansfield	D 4) Audio-visual Tutorial production to significantly aid students in algebra at college level Dingle
A 5) Instructional Budget for Grant Jr. H. S. Ron Jahelka	B 5) Self-Instructional Program for prospective teachers. T. L. Dahle	C 5) System for implementing career education program K-12 P. Gomez	D 5) Most effective use of Learning Center College J. Goodman
A 6) Stimulate private sector investment for University. J.M. Ebbert		C 6) Humanities Curriculum design - Interdisciplinary at the University Swanson	

WITHOUT PLACEMENT: H. MANSFIELD - DESIGN OF A UNIVERSITY CLUB

TABLE III M

FREQUENCY OF IDEALS AND TECHNIQUES

Techniques	As of first followup (20 possible)	As of Final Follow-up (23 possible)			
		Used on individual project	Used other than on project	Others thought useful	Others thought not useful.
Overall philosophy	18	21	20	17	1
Minimum limitations	12	18	9	7	2
Regularities	14	18	9	10	0
Design matrix	8	14	7	10	0
System Dimensions	4	11	8	5	2
Function Expansion*		22	16	15	0
Element Expansion*		6	2	2	2
System Elements*		16	8	8	1
Decision Matrix*		10	7	8	0
Group Processes	17	21	20	16	0
Operator Matrix*		4	1	2	2
Stimulator Lists*		14	10	9	2
Types of Systems ultimate ideal*		16	7	8	4
Feasible ideal*		12	9	10	0
F I S T*		19	9	12	0
Recommended*		14	6	10	0

*No information available by end of the first follow-up.

TABLE III N

Participants	No. of projects completed using IC.	No. of techniques used on IC project.	No. of techniques used on other than IC project.	No. of techniques others thought were useful.
1	1	14	13	12
2	2	8	5	9
3	10	11	2	7
4	3	15	8	10
5	1	15	8	5
6	2	15	12	13
7	2	9	7	
8	2	14	4	6
9	4	10	7	9
10	2	13	12	12
11	6	12	12	12
12	4	12	9	10
13	1	9	3	10
14	0	7	5	6
15	1	13	13	13
16	2	5	3	5
17	2	5	0	1
18	1	10	4	4
19	2	12	2	8
20	1	13	13	0
21	0	9	4	6
22	2	4	2	1
23	0	0	0	0

Mean: 2.22

Variance: 3.80

Attendees at the follow-ups were asked to check from a given list, the various ways in which they had been using the IDEALS Concept. They chose from: 1) meetings and committees; 2) presentations; 3) discussions; 4) personal ways (to be explained); 5) non-work related projects (to be explained); and 6) other (i.e. projects other than the one assigned). A frequency count on their uses of the concept can be seen in Tables III D and III P. Following are some comments the participants had to offer:

> "It is interesting that the concept helped me plan and design my summer vacation next summer. In addition, the concept has been incorporated into 2 graduate courses in education."
>
> "We used this to effect teacher transfers due to changes in pupil-teacher relationships."
>
> "The thought process and philosophy of IDEALS have had significant effects on my relationships with others in my office. I honestly believe that I am performing more efficiently in terms of my job assignment."
>
> Use of the techniques of the concept to "initiate, to stimulate, to open minds, to develop enthusiasm, to get general group support, to keep the pressure on for solutions".

This information seems relevant since the data seems to support the tenant that a system design strategy such as IDEALS has a wide range of usefulness and application. Many participants commented on how they were able to make meetins that they were involved in more effective by asking the group about the purpose of the meeting, by expanding the purpose, by looking for regularities, and by minimizing limitations.

Further, having the participants relate their own specialized applications of IDEALS seemed to be a useful teaching strategy since it enabled the other participants to see concrete examples that involved problems they all were facing in their own organizations and to see how the IDEALS concepts could be applied with flexibility in different situations. Consequently the difficulty of introducing a somewhat alien set of concepts to educators (a system design strategy) was to a relative degree reduced by making use of their own applications of the concepts.

Another topic of interest was concerning those people that the attendees talked with or worked with using the IDEALS Concept and their reactions to it. Frequencies of the types of people are found in Table III P. Notice the amount of interaction with people and IDEALS increases between 17% and 33% in four of the six categories. Representative comments by the participants are:

> "Great interest has been expressed with requests for more time to learn more about IDEALS."
>
> "The people who have worked with me when we use the IDEALS Concept told me that it was an enjoyable yet productive method of working."
>
> "Those who have worked with me using this system have been amazed with the fact that they are forced to think."

TABLE III O

How used the IDEALS Cóncept	Frequency #1 Follow-up	#2 Follow-up
1) Meetings/Committees	19	21
2) Presentations	13	16
3) Discussions	10	19
4) Personal ways a. "I seem to be able to zero in on the heart of the problems." b. Conversation, oral philosophy(2) c. Schedule family activities (2) d. Thought process directed to function (3) e. Planning summer vacations (3) f. Meditation (2)	18	6
5) Non-work related projects a. Worked with an Advisory comm. b. Use in class planning (3) c. Private business ventures (2) d. Assistance to educators in other systems	6	10
6) Other a. Aid in selection of consultants b. Aid in applying for a job c. Used in associations with fellow employees d. Projects other than required one(asked specifically on the first follow-up)	13	3

> "Giving direction to planning--you never seem to spin wheels; you have something to help you move forward. However, I have also experienced some negative reactions resulting from impatience which probably resulted from my limitations in using IDEALS."
>
> "Positive in the sense they had unknowlingly responded to the concepts. I have not identified them specifically as IDEALS."

--INSERT TABLE III P--

At the first follow-up, the attendees simply checked if the response of others to IDEALS was positive, neutral, or negative. Eighteen felt the response was generally positive, three felt it was neutral, and two, negative. Participants complained that it was hard to categorize the responses into a lump of positive or negative. As a result, on the final follow-up questionnaire, the participants were asked to approximate the percentage of positive, neutral and negative reactions. Graphs III E, F, and G show frequencies of the three responses as well as their average and variance.

--INSERT GRAPHS--

The staff was also interested in the ways in which others had used IDEALS (if they had). Table III Q shows attendee response to the question. Some comments made by the attendees concerning this question were:

> "In classes in school administration."
>
> "Students have worked on function expansion and up to broad statements of IDEAL Systems. School staff have worked on function expansion."
>
> "My superintendent has used, with a community advisory group, considering various alternatives to desegregation plans."
>
> "We will do more with this system in November. I am scheduled to meet with teachers."

In an attempt to summarize much of the data found in the incidental outputs, Table III R has been created. Participants are individually compared with their specific reactions to the various questions. This aids in the analysis of the total outputs for all participants.

6. Discussion

For the purpose of data reduction, table III S was drawn up. Using the Final Ability to Use measure that was discussed earlier, the participants were divided into two groups, those that fell above the mean value (6.11/10) and those that fell below. The mean values on various indices were then calculated for the total group, the above the mean group, and the below the mean group. As can be seen in table III S in all but 2 cases, the above mean group was higher than either the total group or the below mean group.

TABLE III P

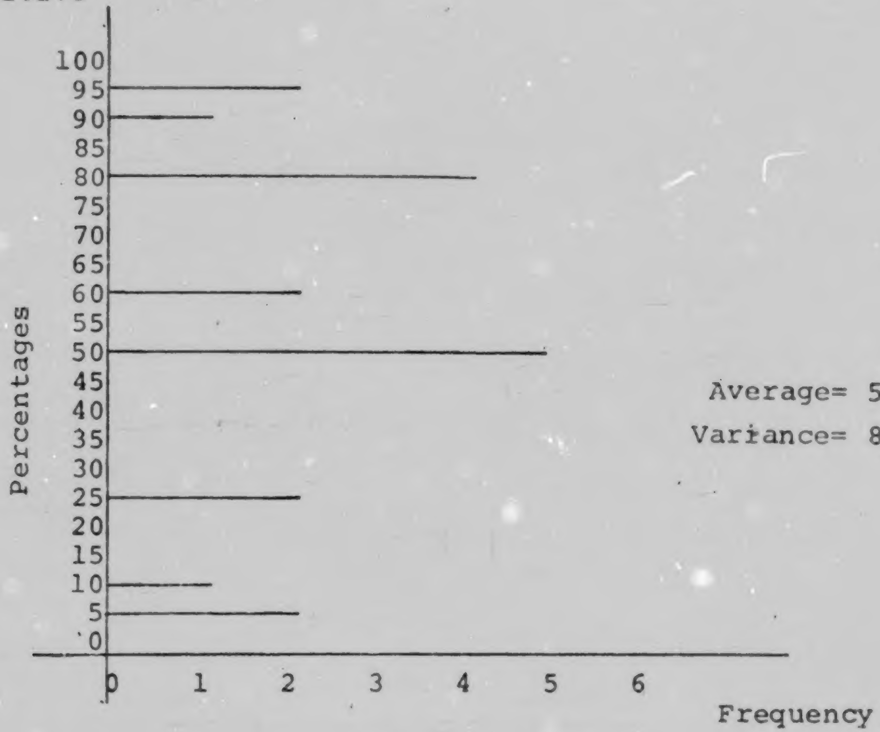
Types of People Spoken to about IDEALS

Type	Frequency #1 Follow-up	 #2 Follow-up
1) Co-workers	19	23
2) Superiors	16	20
3) Groups/people you are responsible for	15	20
4) Non-work related groups/people	11	10
5) Professional groups	6	7
6) Other a. University personnel b. Students c. Personal friends in Industry	--	3

GRAPH III E

Of the people you talked to, what percent of the reactions to the IDEALS Concept were

a. Positive

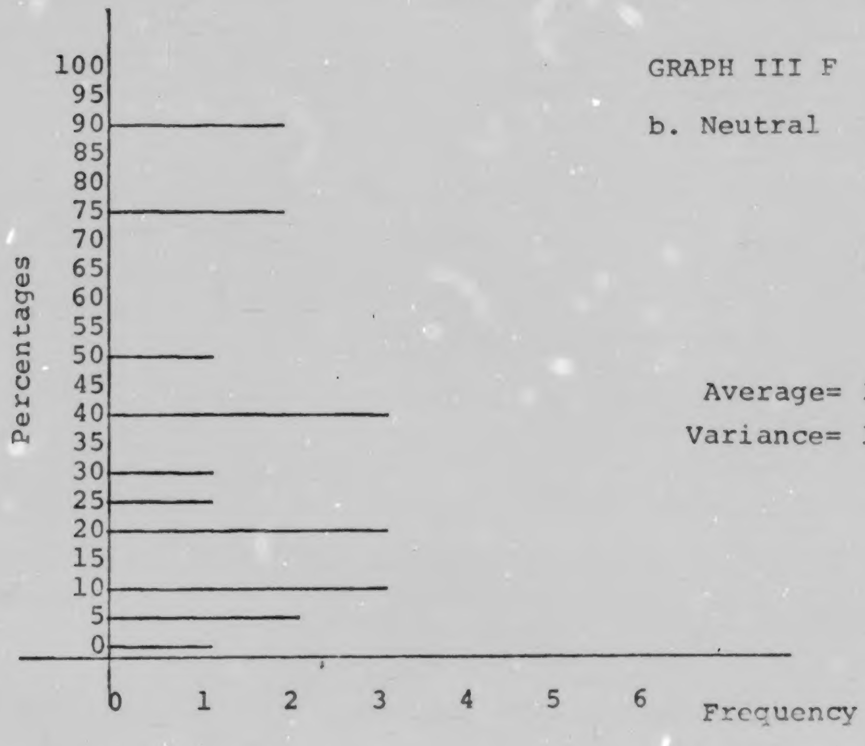


Average= 54.63

Variance= 879.05

GRAPH III F

b. Neutral



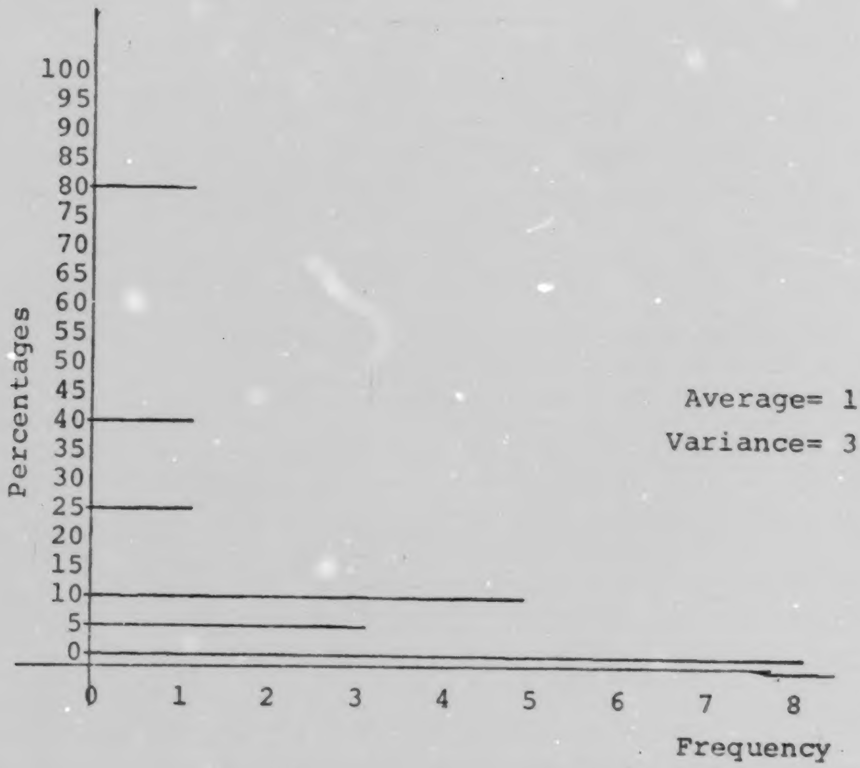
Average= 34.37

Variance= 1090.35

cont.

GRAPH III G

c. Negative (not interested)



Average= 11.0

Variance= 382.44

TABLE III Q

Attendee Activity Checklist

Have other groups/people used the IDEALS Concept?

		No. of times				
		#1	2	3	4	5
with your help	6	2	0	2	0	1
without your help	1	1	0	0	0	0
Have Not Used IDEALS	10					

TABLE III R

INCIDENTAL OUTPUTS SUMMARIZATION

Participant Rank	No. of different ways have used the concept.	No. of different types of groups have talked to about IC.	% of people talked to were: a. positive b. neutral c. negative	No. of times gave out IC material.
1	4	5	95 5 0	13
2	7	3	78 20 2	3
3	2	3	80 20 0	3
4	4	5	90 0 10	10
5	3	4	80 10 10	2
6	4	4	25 75 0	2
7	4	5		3
8	3	3		0
9	3	3	10 10 80	4
10	3	3	95 3 2	0
11	4	4	80 20 0	3
12	4	5	50 25 25	5
13	6	6	50 10 40	6
14	4	3		2
15	7	4	60 30 10	1
16	2	5	60 40 0	2
17	5	3	5 90 5	3
18	3	4	50 40 10	1
19	3	3	50 40 10	10
20	5	3		0
21	4	3	5 90 5	6
22	2	2	50 50 0	3
23	0	3	25 75 0	1

Factors in the table
(1) On the August Knowledge exam there appears to be very little difference between the two groups while on the February Knowledge exam the difference was about three times as large (5.5% difference versus 17.7% difference). It appears that the participants left the three-week course at about the same level but that those who applied I.C. more did better on the retention exam.
(2) Whereas only one project was required, the above mean group completed on the average, almost three projects. Further those participants who completed more projects, made use of many more I.C. techniques. The criterion of completing one project using I.C. was established at the beginning of the training program and therefore a desired outcome of the program was not only reached it was surpassed. There appears to be a relation between using a variety of techniques and completing projects and in interviewing the participants there appeared to be more success coming from those participants who were willing to try a wide variety of techniques - even though they were not necessarily comfortable with their own understanding of the techniques - than from those who felt they had to understand the concepts completely before using them.

This dichotomy between use and knowledge appears in the scores of participants on the comprehension exams. A number of participants did quite well when asked to give back some knowledge about the IDEALS concepts, whereas these same participants did relatively poorly in applying the I.C. on a specific project. As in most training situations, care must be taken in determining whether or not participants are learning to carry out a process or learning to give correct answers on how to carry out a process.
(3) There seems to be a large difference between the two groups in terms of how they felt other prople reacted to their discussions of I.C. (67% to 38% positive reaction). It is not clear whether the participants own ability to use I.C. affected other proples reactions or visa-versa. From other sources, (the interviews) it appears that in some cases the participants organizational environment was of such a restrictive nature that it greatly inhibited the participants opportunity to apply I.C.
(4) The two cases in the table where the below group had higher means was on the mean of the differences between the pre-post measures of creativity. Interestingly both groups had post-test means that were at approximately the same level.

	Post-test Above Group	Post-test Below Group
Creativity Attitude	100.4	100.2
Creativity	18.38	18.0

Consequently, it appears the below group started out lower in creativity factors, increased more and reached the same level as the above group.

C. Sequence

The course was initially designed using a system matrix when the training program was passed and funded. This design was part of the first phase of the entire project and took place

TABLE III S

INDICES	Mean Value 23 people	Above Mean 13 people	Low Below Mean 10 people	
# Projects Completed	2.22	2.84	1.10	1 required
# Techniques on Project (16 possible)	10.22	12.08	7.80	16 possible
# Techniques other than Project	6.43	7.84	4.60	16 possible
% Positive reaction to I C from those participants talked to	54.63	67.09	38.12	
# Times gave out I C materials	3.65	4.15	3.00	
Knowledge - Feb 1973 (7 possible)	4.34	4.88	3.64	7 possible
Knowledge - Aug 1972 (60 possible)	48.2	49.47	46.13	60 possible
PRE - POST MEASURES				
Rigidity difference	-5.04	-5.93	-3.90	
Creative Attitude difference	3.83	1.00	7.70	
Creativity difference	2.35	1.38	3.60	

TABLE III T

SEQUENCE MATRIX

Events	I Inputs	II 3-Week Course	III Interface	IV 2-Day Follow-up	V Interface	VI 3-Day Follow-up	VII Final Outputs
OE proposal set forth	Planning using system matrix.	Designed 2-day follow-up.	Information gathered on location. Location decided:Madison	Design of 3-day session. Location of New Orleans decided.	Further developed the 3 day followup Rough sequence set up.	Review of individual projects and interviews.	Evaluation
Evaluation description. 1.		Table III U-Evaluation daily and weekly. Dynamic program of evaluation was used. (sample of session eval.)	/				
Teaching Strategy 2.		(Teacher directed) Preliminary design of 2-day followup by the participants.	Review set up by questions from participants.	Designed 3-day follow-up.	Modification of 3-day design.	Ran 3-day follow-up.	Student directed. Implementation by M.N. using the I.C. in her own projects.
Recommendations 3.		Week 1 evaluation Week 2 evaluation Week 3 evaluation(final) TABLE III W X				TABLE III Y Recommendations from the final follow-up.	
Workshops 4.		Wk.1- partially useful. Wk.2-more help needed. Wk.3- very useful. TABLE III Z					
Group Projects 5.		Library Project TABLE III AA Design 2-day followup. Decreasing trend in usefulness of project over the 3 weeks.				Project at 3-day. 4 small groups	

in December 71. The purpose of the projects was to develop human agents for systems design. The course was designed to prepare educational professionals for the role of utilizing the IDEALS Concept developed by Gerald Nadler. Another purpose was that the educators would be involved to a point that they could educate others in their own organizations as well as produce materials and procedures which would permit others to implement the same program in other educational organizations.

Throughout the succeeding stages most of the planning and decision making was made via the IDEALS Concept. A rough FIST lacking detail was utilized throughout the phases of the project. Having never developed any detail on the FIST, it was continuously updated by the staff and participants as different needs arose.

The following sequence matrix (TABLE III T) gives an overview of the sequence evaluation, where the sequence was broken down into events that took place across the project phases. The numbers in the sequence matrix refer to paragraphs that follow. Phase II of the sequence event started with the training program which had been formulated before the arrival of the participants. Allowances were made for flexibility within the course. To exercise control on the flow of the 3-week course, two types of evaluation forms were used: (1) session evaluation forms were used for selected sessions, and (2) a weekly evaluation form was given at the end of each week. These gave the participants an opportunity to provide feedback to the staff about the course; i.e., content, interest and identification of problem areas. The intent of these evaluation forms was twofold: a) to enable the participants and staff to have a picture of the groups response to the IDEALS Concept course as it was taking place. This was done in part by summarizing the participants responses on the various sessions and posting them for the participants and staff to see. See Table III U for a sample output. b) To enable the staff to make on-going adjustments in the course based on the participants responses. For example, more time was allocated for specific work sessions when the group requested it. Also, certain lectures were dropped and others added based on problem areas identified through participant responses.

An often overlooked concept of evaluation underlying the use of these forms is that learning is a dynamic process which requires modifications and adjustments as the process is on-going---not just evaluating it after the process has ended. To make this process flow throughout the 3-week session, many of the same types of questions were asked on all the evaluation forms. This helped facilitate the continuous corrections that took place as needed.

1. Teaching Strategy

In the first interface (Phase III in the matrix) between the 3-week course and the first follow-up session (2-day), letters were sent out to identify problem areas the attendees were having with their projects (part of the teaching strategy event). It was felt that difficulties would occur in two general areas:

TABLE III U

SESSION EVALUATION SUMMARY

Instructor Speaker I Time 12.45 2.15 Date 8/16/72 Session 73

Topic: Educational Research and Development

No. of Questionnaires = 16

Question	1	2	3	4	5	6	7	Total	Mean	Variance
Instructors knowledge	0	0	0	1	0	6	9	16	6.44	.62
Orga. of presentation	0	1	0	1	6	4	4	16	5.50	1.62
Pertinence to I.C.	1	0	3	5	4	3	0	16	4.25	1.69
Extent motivated	1	1	0	5	4	5	0	16	4.56	2.00
Relevance to organization	0	1	1	3	3	3	5	16	5.31	2.34
Overall effectiveness	1	1	0	2	6	3	3	16	5.00	2.62
Assignment/Handouts	2	2	1	2	4	2	1	14	4.00	3.43
Visual aids	3	2	0	4	4	1	1	15	3.73	3.40
Level of presentation	0	3	8	2	1			14		
Lecture wanted to be...	0	0	15					15		

General Comments

Very important area of consideration for planners and design people.

Good presentation, more time needed in groups for work on individual projects.

Very interesting.

Missed target with too much emphasis on names without understanding function.

Good.

Very well informed, an excellent source.

Another boring speaker with no relevance to IDEALS.

Good.

(1) understanding the particulars of the IDEALS Concept, and

(2) problems and questions that a particular project raises about applying the IDEALS Concept.

In the context of the whole program, the purpose of the follow up session is to try to deal with these difficulties and to develop attendee competence in using the concept. This purpose includes the function of motivating the attendees to complete their projects. The purpose of the letter was to: (a) acquire a set of general questions concerning the attendees understanding of the IDEALS Concept (b) acquire a set of questions concerning difficulties the attendees were having with their particular projects. The following summary Table III V lists the problems the attendees had in the first interim.

Two of the staff members had begun developing the 3-day conference design. It was revised and changed to accomodate the suggestions of the attendees.

During the 2-day follow-up session the participants made a list of possible functions of the 3-day follow-up. They selected 'To review, refresh and revise the IDEALS Concept for participants' as the initial function of the system and then completed a function expansion. Minimum limitations and regularity units were determined and possible ideal systems to acquire a FIST were generated.

The entire teaching strategy contained trends of improving the ability of people to determine the direction and content of their own learning, as opposed to a lecture situation. Thus, learning is a transitional, continuing, developmental and dynamic process. Another example of this type of teaching strategy would be the individualized instruction process created by Margaret Norton as her course project (See introduction Part II-Example 1).

2. Recommendations

Of course any program containing the flexibility and transitions discussed above has to have certain inputs in order to be dynamic and to meet the changeable needs of the participants. For a dynamic program using extensive evaluation, participant recommendations are necessary. The participants were asked on the weekly and the final evaluations to suggest changes in the course which they felt would be beneficial and would produce more effective results. Summary table III W contains a list of the recommendations and representative comments. It was felt throughout the course that many of the lectures could have and should have been deleted in order to accomodate more individual and group interaction. Another major recommendation was to have more examples and problems using all the steps of the I.C. that had been learned to date. By making changes using specific recommendations and general comments, we were able to satisfy most of the participants and maintain a program in which they wanted to be involved. The suggestions obtained from the final evaluation of the

TABLE III V

ATTENDEE PROBLEMS IN FIRST INTERIM

concerning:

(1) Functions, function expansion and goals (11)
(2) Element expansion (3)
(3) Minimum limitations (5)
(4) Regularities (3)
(5) Ultimate vs. feasible broad statements of ideal systems (5)
(6) FIST and recommended system (6)
(7) Formulating, testing, and installing the designed system (9)
(8) Group processes and interaction (17)
(9) System dimensions (6)
(10) Function and system pyramids (1)
(11) System matrix and parallel systems (2)

Total number of questions: 68

TABLE III W

Recommendations Made During the 3-week Course

Weekly Evaluation #1

Suggest what changes should have been made or should be made now to facilitate your understanding, what changes should be made in the sequence of the lectures.

11 people suggested that more examples and applications be used. An overview or early run-through was suggested by 5. 3 recommended small-group work and 3 step by step work. 3 did not feel changes were necessary.

Representative Comments:

"Immediately work completely through a fairly simple educational example, then hit the theory relating back to quoted example. We have wandered and repeated--but not nailed down."

"This should have been the format:
1) 15 minute adm. session
2) 35 minute overview of system
3) 1 day developing system with class
4) Remainder of time working in small groups with a consultant assigned to each."

"More emphasis on practical application combined with step by step walk thru of total process. More emphasis on concept and procedure, less on nomenclature and terms."

"The more we try to use the system, the more meaningful it will be. I would like fewer speakers from now on and more practice."

Weekly Evaluation #2

Suggest what changes should have been made or should be made to facilitate your understanding in:

I. Sequence
Several complete sequences were submitted, which will follow, but generally, 4 people felt that a situation should have been taken, and followed through completely. 2 felt that there should have been an earlier example of a practical problem. Suggested sequences; 1/3 lecture, 1/3 workshop, 1/3 individual time; presentations (overview)/educational applications/course project presentation by one of the groups; workshops/theory; present IC to entire group/ small group work/individualized instruction on project; begin with a class project/relate system to participants/ course project/outside speakers (enrich understanding)/ indiv. project.

"Go through a total class project."

"An earlier workthrough of a practical problem, perhaps allowing us to struggle with the course project and then two experts go through the process concentrating on the method rather than the solutions."

TABLE III W cont.

II. Lectures
Less confusing terminology
Try to tie in with group activities
Minimum of guest lecturers (6)
Fewer and shorter for individual time (3)

"..it was obvious that the guests (by and large) were uninformed as to the needs and background of our group."

III. Other
No changes necessary (3)
Fewer evening sessions, more time for reading and reflection
Staff should be stricter with class discipline (?)
More group sessions
Written homework to stimulate reading which was not done
The course was too intensely concentrated

"Individual sessions are too long. There should be no evening sessions except a possible one hour lecture by one of the guest lecturers. This course requires too much reading and reflection and no time has been provided for either reading or reflection in the schedule."

"It should not be the responsibility of the class to discipline fellow class members...especially when this has been attempted and resisted."

3-week course were constructive. It seemed appropriate as well as most efficient to categorize the recommendations under the system elements. See Table III X for the suggestions. This proved to be a very effective method to expediate changes more readily in the various problem areas, since the suggestions could be compared to the original design matrix of the project.

Other recommendations were made concerning the course in Phase VI (3-day follow-up). Part of the time during the 3-day follow-up was devoted to interviewing the applicants to find out how they felt about the course and other follow-up session and to what extent they would be using the IDEALS Concept. Several suggestions to improve and commendations fo good aspects are again summarized under the system elements in the following summary Table III Y. Representative quotes are again included.

3. Workshops

The workshop was another sequence event which was very important in preparing the participants to use the IDEALS Concept. Questions found on the evaluation forms concerned the usefulness of the workshops. The participants were asked to rate them on a scale from 1 (low) to 7 (high) in terms of usefulness. They were also asked to make any comments they felt were necessary or would be helpful in facilitating their understanding. The results are given in the following summary table III Z. The summary indicates that by the end of week 3 the participants felt the workshops were quite useful. On the scale of usefulness from 1-7 there was an upward trend from week 1 to week 3. The average increased from 4.90 in week 1 to 5.56 in week 3 showing the increased usefulness of the workshops in facilitating the participants understanding of the I.C. Again, utilizing the dynamic process and instituting some of the suggestions made on the evaluations helped to increase the effectiveness of the training program.

4. Group Projects

Like the workshops, the group project approach was another very important aspect of the course used to implement the IDEALS Concept. Questions on the weekly evaluation forms related to how the project had helped the participants learn the IDEALS Concept and how they felt the method worked in "reality." Summary Table III AA aggregates many of the results. Fifteen of the 22 participants had positive reactions in week two when asked to comment on the course project facilitating learning the IDEALS Concept. However over the 3-week period there was a decreasing trend of how the participants felt about the usefulness of the course project on designing a library. On the usefulness scale of 1-7 the average for week 2 was 5.62 and for week 3, 5.06. Comments citing some of the reasons for this decreasing trend are also contained in Summary S-2.

Since a major portion of the course was spent evaluating the course materials, speakers, and other activities the

TABLE III X

Suggestions To Improve Course, Determined at the Final Evaluation of the 3-Week Course

A. Human Agents (10)

1. 1C (3)

"The differences in the approaches of X and Y were confusing."

"The contrast in the personalities of X and Y was confusing. X was too theoretical."

"Of the two instructors (X and Y) one was theoretical and more into education, and the other was a practitioner. This seemed to leave a hole in the middle and confused me as to what each of them expected. He also felt that Y was more of a performer and not as understandable as X ."

2. Outside (7)

a) Generally outside speakers were lousy, irrelevant, unuseful (5)

b) Didn't like speaker E (2)

c) "The resource people such as speaker C could have been of much greater help with the proper inputs. He would have been much better off without using differential equations and other mathematics. In fact, the resource people would have been more valuable than the pure educators."

B. Outputs (6)

1. Set up and distribute video tapes (5) of:
workshops (3) and
work-throughs (2)

2. The first follow up design was not well done (1)

C. Information Catalysts

1. More examples and applications to do with education, not industry. Practical applications. (7)

2. Simpler examples (3)

"The reading material was overwhelming in a short amount of time."

"I would have liked more simple examples, but pushing them through all the steps in the sequence."

3. X 's examples were confusing and haphazard (3)

"Simple ones rather than X 's examples which were rather haphazard."

TABLE III X cont.

D. Inputs (3)

1. Eliminate terminology, and reduce amount (2)

   "Terminology seems to get in the way of communication and understanding of the concept."

   "You should reduce the amount of terminology."

2. "Advance information sent to the participants before the course began would have helped end the confusion during the first week."

E. Sequence

1. 3-week session should have been cut (3)

2. Have a total run through to the recommended system (5)

   "He would have liked to see the completion of a project, once the idea was initiated."

   "He left with the feeling that he never got past function determination/expansion."

3. More time allotted to reading and individual work (3)

   "There were too many reading assignments."

4. Begin the 3-week course using the concept and end with theoretical aspect. (8)

   "Sequence changes would be earlier run-throughs with philosophical discussions later."

   "It would have been better to just jump into the system and use it."

   "The group was skeptical and cynical at the beginning. A quick runthrough that vividly demonstrated the concept at the beginning would have stimulated interest."

5. Less time should be spent on lectures (3)

   More time on: work-throughs (1)
   informal discussions (2)

6. Jumping from one idea to another is confusing--need better organization, with the concentration of the course (2)

7. Give participants a choice as to working individually or in groups. If they had been able to work individually, a turorial system would have to have been worked out.

8. A suggestion was made to organize work-throughs such that one group would design a system to the FIST and then a second group would take over and expand the FIST to a recommended system. If rotation of groups was practiced, both groups would be able to work with all aspects of the concept.

9. The course could have been carried on in a regional manner, with the IC staff as counselors for every 2-3 participants. The staff could give a short course and in response the participants would give one also

TABLE III X cont.

(with the aid of the staff) to learn the techniques of the concept and its applications.

10. "I would like to see an effort made to offer a follow-up workshop next summer in order to give an in-depth analysis of our effectiveness in using 'systems' techniques and in refining and extending our utilization of the 'ideal' approach."

11. More supervision was wanted, especially in the group work.

12. Written assignments or progress reports by attendees might have helped the attendees keep up with the course.

TABLE III Y

Recommended Aspects of the Course from the final Follow-up

A. Sequence (9)

1. 3-week/2-day/3-day sequence reinforced knowledge learned, and was good. (1)
2. The two follow-ups were good reinforcements to the course. (5)
3. The group work and involvement was most helpful. (2)
4. The course was well organized and the staff did a good job. (1)

B. Information Catalysts (6)

1. Exercises and examples mentioned
   - a) The hospital/nurses example (2)
   - b) The stimulator exercise with the library design. (1)
   - c) The department store pricing example. (1)
   - d) All applied examples. (1)
2. Nadler's article on Management Technology. (1)

C. Outputs

1. "I think the course was very good and I think its accomplished its purpose very demonstratably with some of the projects that have come back, and I think as the year goes on you'll see more of it being used. This is something I don't think you see immediate results from."
2. "One of the most worthwhile experiences of my life."

D. Human Agents

1. Outside (7)

   Speaker B (4), Speaker G (1), Speaker D (1), Speaker K (1)
2. Main Speakers (2)

   "The Nadler/Johnston team was good, combination of theoretical and applied was sometimes confusing though."
3. Staff was well-prepared and helpful. (1)

TABLE III Z

Analysis of the Workshop Approach During the Course

Weekly Evaluation #1

How useful the workshops were:

1		2	3	8	5	2
1	2	3	4	5	6	7

little much

Mean 4.90

Comments and suggestions:

Some expressed a desire for more workshops with an instructor providing guidance and specific problems to [illegible] through in detail.

Weekly Eva[illegible]tion #2

Suggest what changes should have been made or should be made to facilitate your understanding in:

workshops
rotate membership (3)
begin with a clarification of goals
longer and more--necessary for practice (5)
more individualized help (3)
more time for process examples

Final Evaluation

How useful were the workshops in helping you to understand IDEALS Concepts.

		1	3	3	4	5
1	2	3	4	5	6	7

not at all v. much

Mean: 5.56

TABLE III AA

COURSE PROJECT

I Weekly Evaluation #2

2. Comment on the course project in terms of:

a) how the project helped you learn the IDEALS Concept.

Positive (15)
Not particularly helpful (4) since they are still confused
No comment (2)

Comments:

More critical evaluation is necessary.
More guidance is necessary. (3)
Not sufficient time devoted to it.
"This was more helpful than all the lectures".
"As we worked on the problem, many concepts became clearer".

b) How the IDEALS method works in "Reality".

Good/fine/well (12)
Not able to determine until working on projects at 'home' (8)
The method has a tendency to bog down in committee work (1)

"It opened up ideas that would not have occured to us otherwise".

c) your group's work in relation to the other groups

From the comments, there appears to have been four groups, two of which worked well and accomplished alot. A third group worked on an average to mediocre level, and a fourth was unorganized, had little interplay, and had to be prodded to work.

6. How useful was the course project.

			4	5	7	5
1	2	3	4	5	6	7
little						much

mean: 5.62

Comments:

Generally people asked for more supervision (2), an uninterrupted period of work (2), and instead of one large project, several short ones.

4. Suggest what changes should have been made or should be made to facilitate your understanding in sequence.

a. presentation of the course project by one of the more successful workshops
b. begin the session with a class project for a general overview, and then continue session with another course project.

8. List two drawbacks in the course during the week

six people listed inadequate time was devoted to the projects

TABLE III AA cont.

Course Project cont.

II Final Evaluation (16)

2. Degree to which you benefitted from the course project on designing a library.

		1	4	5	5	1
1	2	3	4	5	6	7
none					v. much	

Mean: 5.06

11. List two strong points of the course as you see it now.

three people cited the course project as a great aid participants were asked on the final evaluation of the 3-week course to comment on the actual evaluation procedures and how useful they felt they would be to improving the course. Out of 22 participants commenting on the evaluation activity in the first week of the 3-week session, 8 thought it was good, 1 felt it was poor, and 3 had nothing to say.

The rest of the participants questioned the validity of the evaluation and wondered how it was going to be used. They would have preferred more feedback as to the results of the evaluations.

Typical Comments:

"In most cases, it is difficult to see how these evaluations can be very valid or useful."

"I do not think it interferes; rather it involves each of us. I'm not sure how objective reactions have been. I think we would have appreciated some feedback on our evaluations, perhaps some general results."

D. ENVIRONMENT & PHYSICAL CATALYSTS

The element of environment consists of the physical and attitudinal (sociological) factors within which all the other system elements operate. Setting aside the attitudinal factors, environment is very similiar to physical catalysts, and the two can be evaluated simultaneously. The physical catalyst element consists of those physical resources which aid in the steps of the sequence for changing inputs into outputs without becoming part of the output.

The physical aspect of environment and the physical catalysts were constantly evaluated during the project using the weekly evaluations, follow-up questionnaires and discussion/interviews with the participants. The purpose of this information was to change, using evaluation as a control within the course, those aspects of the course which did not aid in achieving the purposes of the project.

Accomodations during the training course were at Allen Hall in Madison. When asked, fifteen out of the 21 participants commented that they were satisfactory. However, six did not enjoy the accomodations. Three attendees moved out of Allen Hall and into hotels. Two because they were not content with the provided living area, and one because the existing accomodations were not sufficient for him and his wife. As a result of the comments made, "Old Folks Home is not a place to house other people", the participants were stayed in Lowell Hall at the first follow-up.

During the first follow-up session, the environment of Madison was discussed. The attendees felt the weather and climate during the final follow-up to be held in February would not be as conducive as an area farther south since most of the participants came from areas which had warmer climates. Holding the session in a city with a warmer climate would eliminate the time spent complaining about the weather. Of the available cities (those of the chosen climate in which a participant lived) New Orleans was chosen and the participants were housed in the Fontainbleau Hotel.

When questioned concerning the food during the course, the participants all responded that it was good, but some suggested that the amount of money ($3.00) allowed for dinner was inadequate. Breaks, the distribution, and refreshments were well liked.

Physical catalysts for the course basically consisted of classroom facilities. The nine participants that responded to the question agreed that the facilities were good. Responses varied from excellent to ok. Little helpful information was produced concerning physical catalysts until the final follow-up. Five people suggested that video taping a workshop or a workthrough of the system would be helpful to the participants at future times.

The attitudinal factors of environment refer to the atmosphere within which the course was conducted. On the weekly evaluations, participants mentioned the flexibility and informality of the course. These comments were considered important enough by the participants to be mentioned under strong points of the course (twice the first week and three times the second and third).

A further subdivision of informality is group involvement within the lectures and workshops. This was mentioned sixteen times throughout the 3-week course as a strong point (five times in the first two weeks and six times in the third).

The information above indicates that the environment in which the project was held was adequate and conducive to work.

E. Human Agents

The human agent element of the IDEALS Concept refers to any human resource that aids in transforming inputs into outputs without becoming part of the output. Human agent activities or methods include the performance of motions which manipulate and/or change input items and act as sensing devices. The human agents in the training program played a very important part in transforming the twenty-three participant inputs into twenty-three participant outputs with useable knowledge of the IDEALS Concept. These agents related people to the direct methods and tasks used in performing their work.

There were three different categories of human agents in this training program; (a) the two main speakers; Speaker X and Speaker Y , (b) the guest speakers, elements of the interface dimension who related the IDEALS Concept to other fields and career areas, and (c) the staff members who supplemented the main speakers, and were the main agents when the participants broke into workshop groups.

Control of the human agents was accomplished through the weekly evaluation forms. Additional lectures on subjects of interest to the attendees were substituted on demand. On the final evaluation of the training program, (end of week 3) the participants were asked to rate the lectures of the two main speakers, X and Y , focusing on the degree the lectures facilitated their learning the IDEALS Concept. On a 7-point scale (7 high) there was a mean response of 5.06

TABLE III BB

Guest Lecturer Evaluation
Final Evaluation

1. Guest lecturer evaluation on 7-point scale by participants

Speakers	1 low	2	3	4	5	6	7 high	MEAN
A	1	1	3	6	4	1	0	3.88
B	0	0	0	1	3	6	6	6.06
C	1	4	4	4	2	1	0	3.20
D	0	3	1	3	8	0	1	4.25
E	1	2	3	6	2	1	1	3.81
F	0	1	1	3	7	1	3	4.94
G	0	0	1	1	3	7	4	5.75
MEAN								4.56

Comments:
The average performance was high (3)
There was a wide range of interest
They all would have been better if they had 'walked through' a problem and then explained the theory.
Speaker C did not seem sure of what was expected (2)
Should have spent less time on lectures (2)
Additional comments on the excellency of the presentations of
Speaker B (5)
Speaker G (5)
Speaker D (2)
Speaker F (2)

2. Guest lecturer evaluation by participants on a good/bad scale

Speakers	Good	Poor	No Comment
H	5	7	4
I	9	3	4
J	2	7	7
K	6	5	5
L	6	3	7
M	9	4	3
N	0	11	5

which meant that the lectures were quite helpful in supplying material concerning the IDEALS Concept.

The participants also rated the guest lecturers on the same scale, concentrating on how well the material presented helped them understand and implement the IDEALS Concept methodology. Summary Table III BB shows the means for each speaker plus additional comments relating to individual speakers. Other guest speakers were rated on a good-poor-no comment basis since their reactions were either positive or negative. In general the guest speakers did not aid in helping achieve the purpose of the program, to have participants acquire useable knowledge of the IDEALS Concept. Apparently synthesizing of the IDEALS Concept with its use in other fields was not successfully achieved by the guest speakers in a fashion that was satisfactory to the participants.

The participants rated selected lectures given by the main and guest speakers using many different criteria. Graph III H shows on a 7-point scale (7 high), that the participants were generally motivated by all the lectures presented. The mean was 4.99. The graph III I illustrates the pertinence of the lectures to the IDEALS Concept as determined by the participants. On the same 7-point scale, the mean pertinence of the lectures to the concept was 5.21. A final rating of the lectures concerning their relevance (see Graph III J) to the projects and organizations of the attendees as determined by the attendees was made using the same scale. The mean relevance was quite high, 5.48, indicating the attendees could find a use in their individual and group projects for much of the information presented.

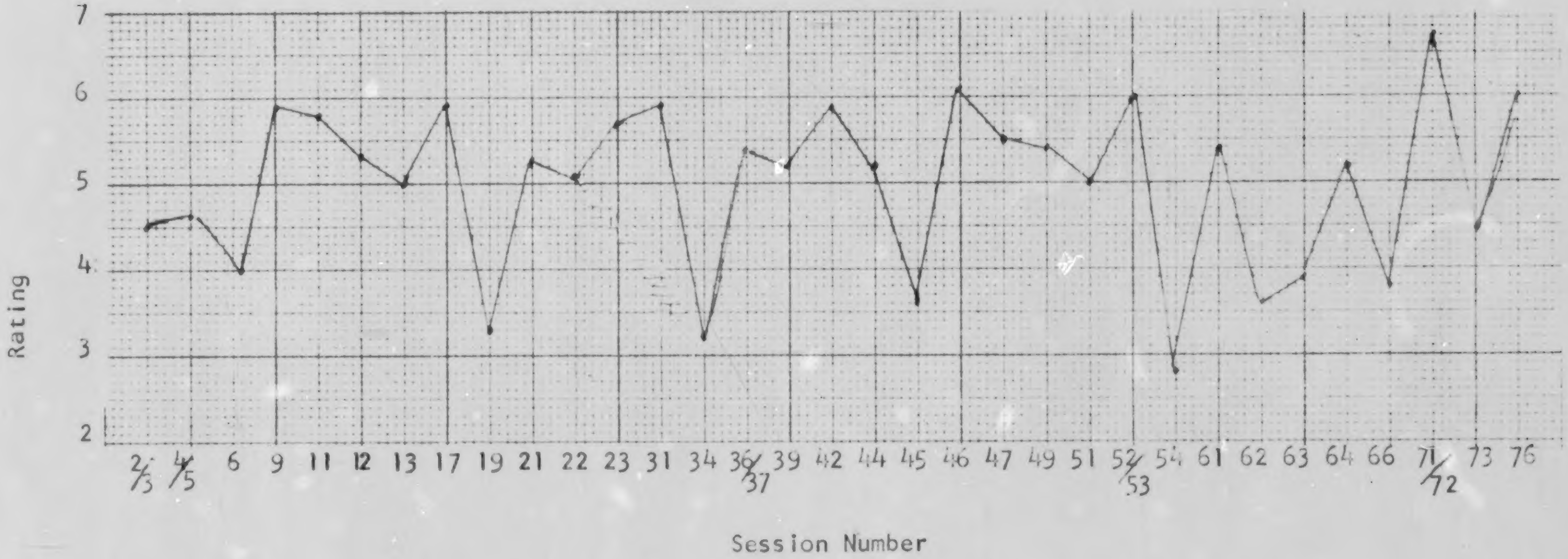
The third category of the human agents was the staff. Their importance in the training program increased throughout the programs. Their helpfulness was mentioned once in the weekly evaluation #1, four times in the weekly evaluation #2, and 20 times in the weekly evaluation #3. The staff showed much patience and enthusiasm, greatly appreciated by the attendees. There were no criticisms offered throughout the entire project.

F. INFORMATION CATALYSTS

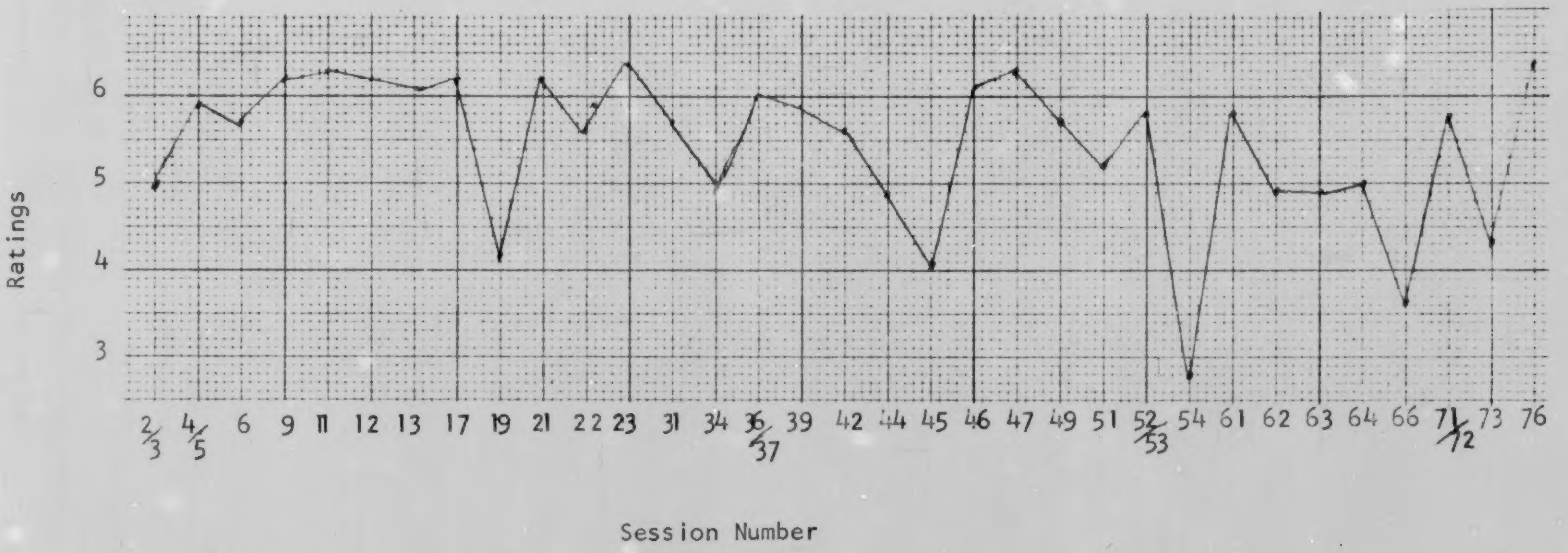
Information catalysts are information resources that aid in the steps of the sequence for changing inputs into the outputs, without becoming part of the output. Of course, much information, unfortunately, is accumulated as a result of a training program like this, but only certain parts of the information actually helps transform the inputs to outputs in a catalytic manner. Graph III K helps illustrate how information catalysts are utilized in transforming the inputs.

In the major system the information catalysts were a set of "posters" made up for the course and two books; Gerry Nadler, Work Design: A Systems Approach and Richard Clark and J.T. Johnston, IDEALS Concept Cases and Program. The basic information contained in these information catalysts is about the IDEALS Concept. Therefore, in evaluating the information catalysts, it is necessary to look at the contents as well as the characteristics of each specific book (i.e. its type, style, and difficulty).

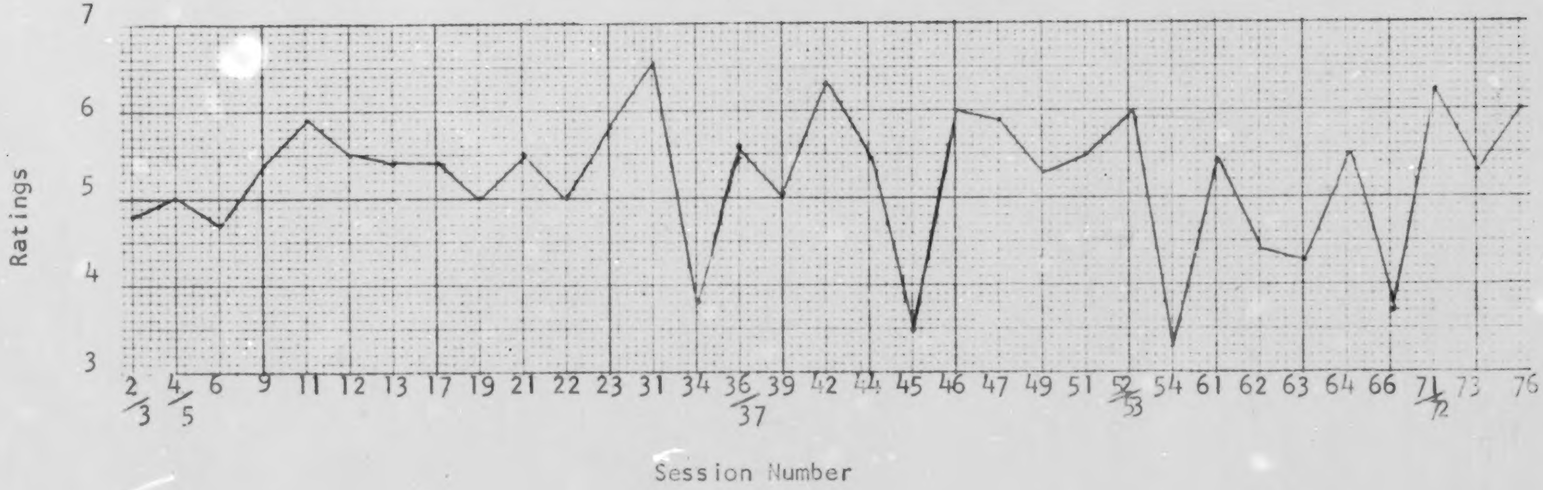
GRAPH III H Extent participant was motivated by lecture

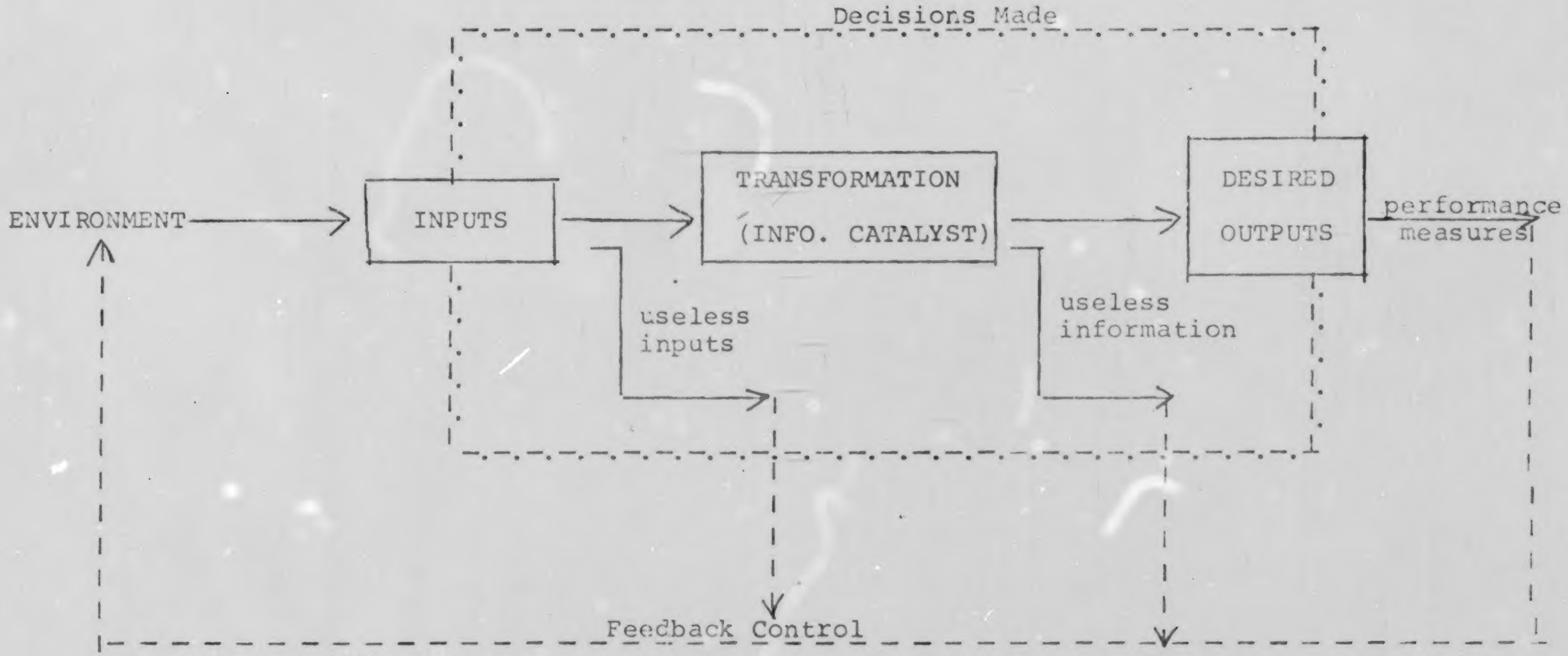


GRAPH III I Pertinence of lecture to IC as determined by participants

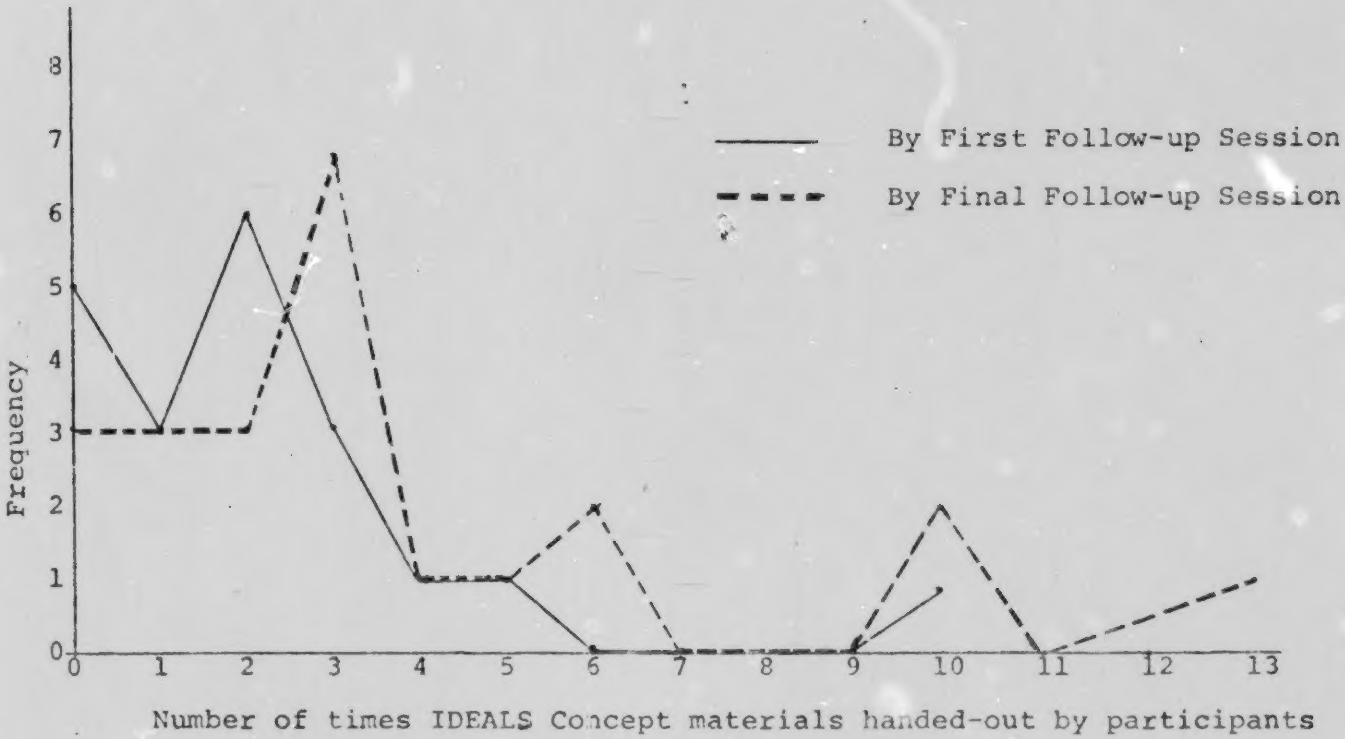


GRAPH III J   Relevance to project and organization of attendees




Decisions Made
ENVIRONMENT
INPUTS
TRANSFORMATION
(INFO. CATALYST)
DESIRED
OUTPUTS
performance
measures
useless
inputs
useless
information
Feedback Control

Graph III K Utilization of information catalysts in a system



Graph III L Frequency of distribution of materials from project

When asked about the program literature on the weekly evaluation #3, nine participants out of twenty-one stated that they were good but that reading them was difficult. Five others commented that they were too involved and too technical for educators. One person mentioned that the books were much too involved for the time allowed. The rest made no comment. In order to determine if this was still the participants opinion of the books, questionnaires at both follow-ups asked questions related to whether participants had distributed any materials and whether they wanted more materials. The amount of materials distributed increased by 33% between the two follow-ups. The desire for additional materials increased by 44%.

Graph III L shows the relationship in frequency counts for the two follow-ups. Fifteen out of twenty people had distributed some of the materials. At the final follow-up in February, twenty out of twenty-three had distributed materials. This seems to indicate confidence in the usefulness of the materials and the information each participant received from them.

The IDEALS Concept is itself an information catalyst. An analysis of the concept forms the second part of this section. On the final weekly evaluation, participants were asked to rate IDEALS on a scale from 1-7 (it is not better than what I know-it is definitely better than what I know). Out of sixteen responding, the mean was 6.25, which is quite high. On another similar question, six out of ten responding said that the IDEALS Concept is better than their conventional strategy. Some comments were, "Beats the hell out of the S.W.A.G. method..," and, "IC is more logical and positive in approach than my design system." Four felt it was similar to other methodologies in the sense that all the various strategies complement each other and IDEALS is simply an additional and improved tool. A third question asked for a general reaction to the concept. Some of the comments are summarized below.

"Its probably been the most significant educational experience that I've been involved in. It seems to have given me the ability to zero in on the heart of the program.. or any problem."

"I really believe that the IDEALS Concept is probably more useful now than it would have been 7 or 8 years ago when I think that I attacked things with such vigor and enthusiasm, that lack of knowledge of IDEALS might have been less of a handicap where lack of knowledge would be today... and consequently I think it helps keep my mind more open causing others to keep their minds open. It always is an upward and outward look."

"Rather than looking at things as they are, and asking how to improve, we start with how should things be and we work down from that. And therefore we ought to end up, and I think we do finally come up with, a result that is superior."

"I find myself involved in this daily now and I think its because it has become a way of living, a philosophy with me."

"Its created an awareness in a philosophical sense... The most valuable result of this was a change in philosophy, a change in the way of looking at the situation in which you want to work."

"It opens the thinking up a great deal more than a sequence that plunged too quickly into the actual design. And here you end up with far more possibilities of what you could design because of the following sequence."

"This I thought was one of the real assets of the program, that it gave some kind of background that allowed growth. In other words, when I say growth, I mean an improvement of programs. And it is something that didn't have to be limited to your school. It could be any problem."

Measurements of the usefulness of IDEALS to each participant and his/her organization was constantly on the weekly questionnaires as well as the final follow-up questionnaire. On a seven point scale, usefulness of IDEALS went up to 5.33 the second week from 4.81 after the first week. On the final evaluation 14/16 participants felt there was great potential for IDEALS within their organizations. Explanations from those two who felt there was not much potential use of IDEALS were:

"I believe we can use the IDEALS Concept in certain developmental areas--but would not use it for minor or routine functions."

"I just cannot bring myself to equate human beings and industrial or business products at zero cost in the same terms."

At the final follow-up, 22 out of 23 felt that potential applications for the IDEALS Concept were quite broad.

"The human involvement approach is best when working with human problems."

"Anytime you can find a purpose, you can solve any system." One person felt the applications would not be broad because, "the number of people interested in IC is limited, the approach is too theoretical for the ordinary layman". Of the twenty-two who agreed that the concept was better, five felt the amount of applications could depend on individual needs. Two said they depended on job limitations, and two others said they depend upon the problem at hand.

Of course everything about IDEALS and the course was not perfect. The following is a list of problems with a frequency count, that the participants had between the 3-week course and the first follow-up. They concerned:

(1) Functions, function expansion and goals (11)
(2) Element expansion (3)
(3) Minimum limitations (5)
(4) Regularities (3)
(5) Ultimate vs. feasible broad statements of ideal systems (5)
(6) FIST and recommended systems (6)
(7) Formulating, testing and installing the designed system (9)
(8) Group processes and interaction (17)
(9) System dimensions (6)
(10) Function and system pyramids (1)

(11) System matrix and parallel systems (2)

At the final follow-up, a shorter list was drawn up (21), that included problems occuring while using the concept (i.e. #1,2) as well as problems with the various techniques.

1. It is difficult to use the concept unless you have authority within the group or committee. (2)
2. Many thoughts are produced with IDEALS but they range too far ahead of implementation for effective follow through. (1)
3. It is hard to explain the difference between regularities and limitations, especially how something can be both at once. (1)
4. It is hard to distinguish between goals and function. (2)
5. The terminology is confusing. (6)
6. Other prople mentioned they felt restricted to the steps when one participant used the system.
7. The use of function within the system was not clearly explained at the course.
8. One participant felt that the concept is too deep for the ordinary layman.
9. The system is too slow, it takes too much time and effort. (4)
10. One participant mentioned he/she was still confused with the concept. He/she cannot grasp the technicalities.
11. A problem was found trying to keep function expansion to small steps.

There are still a few problems concerning function, function espansion and definitions of systems dimensions, but many of the earlier problems seem to have been cleared up by the final follow-up.

Referring to the section on outputs and the sub-heading of projects and Related Information, Table III M shows those techniques of the IDEALS system which people who participants spoke to about IDEALS felt were useful and not useful. Also below is a list of those techniques the participants found unnecessary.

(1) group processes, because of job limitations (1)
(2) element expansion (3)
(3) decision matrix (2)
(4) feasible ideal system (as opposed to FIST) (3)
(5) minimum limitations (3)
(6) broad statements of ideals (1)
(7) design matrix (3)
(8) all techniques except the overall philosophy

Their reasoning was that given a time limitation, one could complete the system without following the techniques. They also felt that they could always go back to the step and complete it if necessary.

Similarities in the lists are apparent (element expansion, ideal systems, minimum limitations, and the matricies). There are two possible reasons for this (1) The mentioned techniques are those which are best used when needed, or (2) Participants explained their beliefs concerning the technique rather than simply presenting it and applying it. The first reason would be the best, since one of the basic characteristics of IDEALS, is that there is no set sequence of steps. If a step doesn't seem necessary, then it should be eliminated. If this were the reason for similarities, then the participants did grasp one of the basic aspects of IDEALS. Probably, the similarity in the list is caused by both, as some attendees did grasp the concept extremely well and others not as well.

PART C - INSTRUCTIONAL PACKAGE

I. Introduction

The third objective of the project is "to produce materials and procedures which will permit others to implement similar programs in educational organizations."

Based on feedback and comments from the participants, the package to achieve this objective has several distinctive characteristics: (1) it initially explains the concepts at a level intended only to give the reader a "feel" for how to use the concepts without becoming lost in the terminology; (2) Technical explanations, axioms, theories and alternative methods are presented at the end of some chapters for more detailed study of the IDEALS Concept, and (3) examples, illustrations, case studies and exercises are found throughout the package to insure understanding of the various concepts.

A description of the package sent to various publishers follows with a detailed outline of the package.

Description of the Instructional Package

Education today urgently needs innovative solutions for the many challenging problems that it faces, such as:

i) motivating junior high students to read books
ii) developing innovative university curricula that prepare students for a changing world
iii) involving the community in actively designing the education processes in a school district.

This book poses the fundamental question of how educational decision makers can approach these and other problems to obtain significant results. Traditionally educators have often approached problems by collecting data on the current situation, analyzing the data, and designing a solution on the basis of the data obtained.

The authors have adapted a successful approach in designing solutions to education problems. It develops results that are innovative, more flexible, and less limited by preconceptions. For example, using the approach on the first problem produced these results: "Out of 102 students I had, all but four developed a plan for reading the book, actually read the book, and prepared some sort of final report." For the second problem, the history department at a state college "found that they had no definable purpose for their program" and subsequently developed a curriculum when they identified a purpose. In a similar manner, the art department "found that they were geared towards producing artists when the desired emphasis was to produce high school art teachers." For the third problem, results were obtained when a group of community people found they were able to work effectively together in arriving at a workable solution. "If nothing else, the hot and angry atmosphere had stopped completely, people actually enjoyed themselves and the group was able to arrive at some high quality decisions."

What is the IDEALS Concept?

The *way* educational products and processes are developed significantly affects the quality and effectiveness of the results. Using this basic premise the book shows that the best results are obtained when design and development are guided by how things should be rather than by how things are. These philosophies operate in the IDEALS Concept through its three basic parts: (1) the Design Strategy identifies needed purposes and target systems to guide solution finding; (2) the Solution Framework probes all elements and dimensions in specifying a solution; and (3) the Involvement of People in Planning consciously seeks continuing change of all products and procedures while recognizing that people at all levels and ages have the ability to be an integral part of any project or program.

Background to the Book

This book was developed with grant funding from the United States National Institute of Education. The project pilot-tested the applicability of the IDEALS Concept to educational problems. The central purposes of the project were three fold:

1. to prepare educational professionals for utilizing the IDEALS Concept in educational curricular and program development
2. to educate the professionals involved to the point where they can teach the ideas to others in their organizations
3. to produce materials which can be used in IDEALS Concept training.

This book achieves the third purpose.

The following partial list of project participants indicates both the type of educational professionals that have used the concepts and locations in the country where ongoing applications of the strategy are taking place.

Position	Organization	Location
School Teacher	Arlington High School	Riverside, California
School District Curriculum Specialist	Espanola Municipal Schools	Espanola, New Mexico
Chairman, Dept. of Education	University of Tenn. at Chattanooga	Chattanooga, Tennessee
Principal	West Point High School	West Point, Georgia
Director: Educational Resources and Campus Planning	Indiana University/ Purdue University at Indianapolis	Indianapolis, Indiana
Assistant Legal Advisor	State Superintendent of Public Instruction	Springfield, Illinois
Supervisor of Federal Programs	Carroll County Public Schools	Westminster, Maryland

District Superintendent	Fallbrook Union High School District	Fallbrook, California
Head, Division of Humanities	Bemidji State College	Bemidji, Minnesota
Director of Continuing Education	University of Oregon	Eugene, Oregon

Some of the specific applications of the design strategy are listed below. These were developed by both the project participants and others in the field of education. The list emphasizes the wide range of successful results obtained by using the IDEALS Concept while at the same time portraying the potential for its further use and development.

Education Projects and Programs

Student-Developed Individualized Learning in the 7th Grade

Program to eliminate Alcohol and Drug Abuse in High School

Native American Education Program in a New Mexico High School

Statewide programs for education of the gifted

Individualized Remedial Learning emphasizing students' special interests

University Registration and Advising System

Preparing a talk to explain the firing of a favorite high school football coach

University Facilities Planning

Human Relations Program for a racially troubled public school

Design of the planning strategy for the Governors' Commission on Education in the State of Wisconsin

Design of the Applied Research Branch of United States Office of Education

Design of a Dynamic Evaluation System for a United States Office of Education training program

Design of Industrial Engineering Department curricula at the University of Puerto Rico and the University of Wisconsin

Design of the William James College in Grand Rapids, Michigan

IDEALS Non-Education Applications

The IDEALS Concept was developed about twelve years ago and has a long-standing history of diverse applications in designing and planning innovative solutions in industrial, government, health care, railroad, business, and similar settings. A complete text on the IDEALS Concept is Work Design: A Systems Concept (Gerald Nadler) 1970, and books on the IDEALS Concept have been translated into six languages. Applications and programs exist in many other countries, such as Canada, Europe, and Japan. Some of the service type projects where the IDEALS Concept enabled various organizations to achieve necessary purposes in unique and effective fashion are:

Non-Education Projects and Programs

Design of a St. Louis Consulting Company, St. Louis, Missouri, 1966

A system of patient care based on patient needs (as reported in Nursing Outlook 20, 4, April 1972, pages 257-264)

Planning research and development for a Wisconsin Regional Medical Program (as reported in E.T. Moore, Ed., Emerging Methods in Environmental Design and Planning, MIT Press, 1970)

A Kellogg Foundation-supported project for improvement programs in twelve hospitals

An improvement program for a district of the State Department of Vocational Rehabilitation, Wisconsin

The design of a credit system in a large oil company (as reported in System and Process Journal, January 1966)

Planning of a maintenance yard for a railroad (as reported at Railway Systems and Management Conf., Chicago 30 April 1972)

Training the 4500 personnel of STATISTICS CANADA in a planning strategy, Montreal, Canada

Improvement of the physical plant division at the University of Wisconsin, Madison, Wisconsin

Biographical Notes on the Authors

Gerald Nadler, Principal Investigator for this project, is Professor and Chairman, Department of Industrial Engineering at UW-MSN. He held the same position at Washington University, St. Louis, where he was located after receiving his Ph.D. in 1949 until he left for Wisconsin in 1964. He formulated the concepts, program, and strategy of the IDEALS Concepts, and has written over 100 papers and 6 books on his work. He lectures extensively on his ideas, including visiting professors in England and Japan.

James V. Schultz is a Ph.D. candidate (expected Dec. 1973) in Educational Psychology, UW-MSN with a background in Educational Systems. He has worked with CAI and CMI systems, has been a T.A. for basic educational psychology courses, and for the past year and a half has worked with Prof. Nadler on the NIE project.

James C. Thomson, Jr. is a M.S. candidate (expected Dec. 1973) in Industrial Engineering, UW-MSN with a background in organization and system design. He worked with system design and operations management for four years as a naval officer, has been a T.A. for basic design courses in Industrial Engineering and for the past two years has worked with Prof. Nadler on the NIE project.

Detailed Outline of Instructional Package:

IDEALS Concept: Purpose Based Educational Planning

Chapter I

1. Introduction to the Book

   Case History I: The IDEALS Concept Used in Individualizing Instruction
   --Students Develop Their Own Systems
   --The Teacher's Role
   --Student Reactions
   --Reactions from Others (administrators and teachers)

   Overview of the Parts of the IDEALS Concept
   --Phases of the Design Strategy
   --The Solution Framework
   --The Effective Involvement of People in the Design Process

   Conclusion

Part I The Planning Strategy

2. Determine the Necessary Purpose (Phase I)

   Basic Explanation
   --What is a purpose?
   --Exercise on Purpose Determination
   --Purpose Hierarchy

   Case History II: For a Parent Orientation System Purpose Expansion
   --Initial Purpose Determination
   --Purpose Expansion Using a Group
   --Selection of a Purpose Level for Design
   --Discussion of Case Illustration
   Exercise on Purpose Expansion

   Additional Explanation for Phase I
   --Purpose Determination
   --Initial List of Purposes
   --Determining the Most Immediate Purpose
   --Purpose Expansion and the Purpose Hierarchy
   --Selecting a Purpose Level for Design
   --General Guidelines for Group Purpose Determination

   Summary of Phase I

   Case History III: Use of Purpose to Handle a Sticky Group Conflict Situation

3. Generate Purposeful Solutions (Phase II)

   Introduction - Purpose and Background for Phase II

   Basic Aids in Solution Generation

   Generating Solutions Using Limitations and Restrictions

   Case History IV: Generating Solutions for a Language Arts Unit
   --Illustration

--Discussion of Case History IV

Exercise for Generating Solutions

Summary and Elaboration of Techniques Used in Case History IV

Generating Solutions Using Any Idea

Generating Solutions for a Parent Orientation Unit-A Continuation of Case History II

Techniques to Aid Solution Generation

Techniques for Maintaining the Flow of Ideas

Stimulator Techniques for Generating Ideas

4. Devise Ideal Target and Detail Recommended Plan (Phases III and IV)

Introduction to Phases III and IV

Phase III - Devising an Ideal Target
--The regularity principle
--Procedure for selecting a target
  sorting using purpose hierarchy
  sorting using content or list of concerns
  sorting using the solution framework
  choosing among alternative targets

Procedure for Adding details to the target

Phase IV - Detailing the Recommended Plan
--Incorporating irregularities and exceptions
--Detailing the plan

Case Illustration of Phases III and IV
--Case History V - Design of an Industrial Engineering Curriculum
--Case History VI - Design of a University Student Registration and Advising System
--Case History VII - Design of a Three Day Conference

Summary of Phases III and IV

5. Implement Workable Plan (Phase V)

Factors Influencing Successful Implementation

The Recommended Plan

Organizational Resources
--Non-purchasable Resources
--Purchasable Resources

Attitudes and Feelings of Personnel

The Approval System

Characteristics of Decision-Making Units

Five Phases to Successful Implementation

6. Review of the Design Strategy

Introduction - Context for the Strategy
--Assumption of the IDEALS Concept
--Characteristics of the IDEALS Concept
--The Dynamic Process of Design
--Focus on "How Things Should Be"
--Based on Needs of Everyone Involved in the System
--The Involvement of Everyone

Philosophic Look at the IDEALS Concept

Summary and Interrelationship of the Design Phases

Part II The Solution Framework
7. System Axioms and the Solution Framework

System Axioms

Example of a Systems Approach Using the System Elements

System Dimensions

The Solution Framework

Part III The Involvement of People in Planning
8. The Design Team: Structured and Managed to Achieve Results

Design Team Composition
--Who should belong?
--How many members should the team have?

Management of the Design Team Interaction Process
--Space, Status, Leadership, Participation, and Equality
--Conflict within the Design Team
Conflict resolution strategies and outcome
Win-win conflict resolution

Group Management Techniques
--Nominal Group Process
--Delphi Technique
--Use of Media

9. The Organization: Continuous Change

Introduction

Planning Orientation
--Original Planning
--Corrective Planning
--Betterment Planning

Levels of Planning

Betterment Planning - Organizing for Continuous Planning
--Environmental Factors
--Organizational Factors
--The Work Group

Summary

10. The Evaluation Process: An Aid to Planning and Implementation

    Introduction
    - Purpose of Evaluation
    - Case History VIII: Control Dimension Used to Identify Potential Evaluation Components

    Evaluation As a System in Itself
    - Elements of an Evaluation System
    - Evaluation Components as Systems

    Case History IX: Evaluation Components
    - Content Modification System on Sequence of Three-Week Course
    - Attitude Measures System on Input and Output System Elements

    Summary

Appendices

A: Outlines for Courses in the IDEALS Concept

B: Techniques for Ranking, Rating and Priority Setting

COURSE SPEAKERS

APPENDIX AA

William R. Bush	Associate Director, Wisconsin Research and Development Center
Robert E. Clasen	Professor, Extension Education, University of Wisconsin
Andre L. Delbecq	Professor, School of Business, University of Wisconsin
H. Peter Delp	Assistant Professor, Industrial Engineering, University of Wisconsin
M. Vere DeVault	Professor, Curriculum and Instruction, University of Wisconsin
Alan C. Filley	Professor, School of Business, University of Wisconsin
William J. Gephart	Director, Research Services, Phi Delta Kappa, Bloomington, Indiana
Charles E. Goldsmith	Chaplain and Clinical Psychologist, Deaconess Hospital, Milwaukee, Wisconsin
David M. Gustafson	Associate Professor, Industrial Engineering, University of Wisconsin
W. Lee Hansen	Professor, Economics and Education Policy, University of Wisconsin
Kenneth R. Ingle	Director, Governor's Committee on Special Learning, State of Wisconsin
James T. Johnston	President, Ideal Systems Inc., Madison, Wisconsin
William R. Kellett	Retired President, Kimberly-Clark Corporation, and Chairman, Governor's Commission on Education, (1969-1970)
Philip Lambert	Professor, Educational Psychology, University of Wisconsin
Gerald Nadler	Professor, Industrial Engineering, University of Wisconsin (Project Director)
Gordon H. Robinson	Associate Professor, Industrial Engineering, University of Wisconsin
Howard E. Wakefield	Professor, Educational Administration, University of Wisconsin
Burton A. Weisbrod	Professor, Economics and Education Policy, University of Wisconsin

PART D - APPENDICES

Robert E. Clasen

Robert Clasen is, at present, Associate Director of the Instructional Research Laboratory, UW, Associate Professor of Extension Education, UW-Extension, and Coordinator of Supplementary Training, Year Round Head Start Wisconsin Extension Division.

He received a B.S. in History from Marquette University in 1955, his M.S. in Educational Administration from UW-Milwaukee in 1961 and Ph.D. in Philosophy from the UW-Madison in 1965.

Professor Clasen's research and consulting work has included the Aerospace Education Foundation; Madison Public Schools; the President's Council: Wisconsin State Universities; Project Head Start; Wisconsin Department of Public Instruction, Title III, ESEA; Oconomowoc Public Schools; the Cooperative Educational Service Agency and University of Wisconsin faculty.

In the area of research, Professor Clasen has been director of various projects including the A.E.R.A. Committee "Access to do Research"; Wauwatosa Public Schools "Accelerating the Academically Talented in the Elementary Schools"; Portage Head Start; Dane County Head Start; Department of Public Instruction; Attitude Inventory for Driver Education; Stratification of School Districts in Wisconsin; Follow-up of a Driver Education Class and University of Wisconsin-Extension Research Activities. He has been active in Multimedia Instructional Programs in Mathematics, Multivariate Procedures for Stratifying School Districts, Elementary School Teachers' Views of Classroom Teaching and Learning, Madison Public Schools Research Effort and Distributive Education Consortium Criterion Referenced Assessment. He has had numerous articles and books published and has done various editing and reviewing.

William R. Bush

Dr. Bush is, at present, Associate Director of the Wisconsin Research and Development Center, and serves in various capacities on committees, including the Center Executive Committee, and the Management Council (Chairman).

He received a B.A. in Psychology from Brown University in 1950, his M.A. in Psychology from Brown University in 1951, and Ph.D. in Psychology from the University of Rochester in 1954.

During 1970-71 Dr. Bush was manager of the Educational Planning and Curriculum, RCA Computer Systems Division in the RCA Corporation. Some of his responsibilities included evaluating and recommending the implementation of new instructional curricula and languages and the development of RCA Educational Marketing Plans. Dr. Bush was employed by the RCA Corporation in various positions from 1956-1971.

He has several books and articles published.

Dr. A. L. Delbecq

Dr. André L. Delbecq is a Professor of Management in the Graduate School of Business and the Industrial Relations Research Institute, University of Wisconsin, Madison, Wisconsin. Dr. Delbecq received his B. B. A. (cum laude) from the University of Toledo. He received his Master of Business Administration and his doctorate from Indiana University during which time he held a Ford Foundation Doctoral Dissertation Fellowship won in National Competition. His research has received recognition from scholarly and professional associations including the Academy of Management, the American Sociological Association and the American Public Health Association. He was one of nine U. S. Scholars to win a Ford Foundation Faculty Fellowship in organization behavior at Carnegie Institute of Technology in 1965.

For a number of years his research has focused on executive decision-making, and the linkage between decision-making groups at the executive level and the general administrative systems within complex organizations. He has likewise been concerned with program, project and matrix management in Federal, State and Urban organizations. Finally he has specialized in models of large-scale planning such as urban, social, and health planning at the regional and state levels.

During 1967-1968 Dr. Delbecq was a Research Associate in the Matrix Management Research Project Group funded under a National Aeronautic and Space Administration Grant. The Matrix Group was concerned with a theoretical model which encapsulated the program and project management experience in the aerospace field. During 1968-1969, Dr. Delbecq received a grant from the Institute for Research on Poverty to study program planning for social action and urban programs. This research was funded by the Office of Economic Opportunity. During 1969-1970 Dr. Delbecq received research grants to explore further applications of Matrix Management theory for higher education administration including both research programs and student personnel services. During 1970-71, Dr. Delbecq was co-principal investigator in a study of top-management decision structures in the Meteorological Satellite Program of NASA and ESSA.

Dr. Delbecq is co-author of a readings book in management published by Richard D. Irwin, of a book dealing with organization decision-making published by McGraw-Hill, and has authored more than 30 articles dealing with managerial roles and organizational designs. He is on the Editorial Board of the Journal of the Academy of Management and is Secretary Treasurer of the Midwest Academy of Management.

Dr. Delbecq has served as a consultant for industry, government, and higher education including: Wisconsin State Department of Agriculture; The Office of Economic Opportunity; The Consortium of Northern Michigan Colleges and Universities, Wisconsin State Employment Services; Comprehensive Health Planning Programs of the Department of Health, Education and Welfare; the State of Hawaii; the Institute for Environmental Sciences, and the Governor's Task Force for Health Planning and Policy, - State of Wisconsin.

Dr. Delbecq has lectured or served as a consultant in Micronesia, Japan, South Africa and France.

Peter Delp

Assistant Professor Peter Delp, received his Ph.D. from the University of California, Berkley, and joined the University faculty in January, 1972.

His research interests include the application of dynamic systems analysis techniques to the criminal justice system, adaptive control in man-machine systems, and spectral analysis of systems with time-varying dynamics.

Professor Delp's publications concern mathematical models of automobile drivers, time series spectral analysis, and models of human controller adaptation.

He's a member of IEEE and Systems-Man Cybernetics, and, in his spare time, enjoys playing the folk guitar, bridge, and tennis.

Prof. Delp has done consulting in control room design for oil refineries, in mechanical harvesting design, and in railroad safety.

M. Vere DeVault

M. Vere DeVault is at present a professor of Curriculum and Instruction at the University of Wisconsin, Madison.

He received his B.A. in 1947, and his M.A. in 1948 from DePauw University, and Ed.D. in 1953 from Indiana University.

From 1953-61 he was Assistant Associate Professor of Curriculum and Instruction at the University of Texas. Professor DeVault's special teaching area is in mathematics education. He is currently researching, supported by the National Institute of Education, in individualizing instruction in mathematics. He has served on committees in various capacities, such as the Wisconsin Mathematics Council, and Research Committee, Association for Childhood Education.

He has published widely in research monographs, journals, and books. One of his recent books is The Power of Competency-Based Teacher Education.

Alan C. Filley

Professor Alan Filley graduated from Millikin University in 1953, received his M.B.A. from Indiana University in 1956, and his Ph.D. from Ohio State University in 1962. His teaching experience has included Assistant Professor at the University of North Dakota from 1956 to 1958, Visiting Assistant Professor at the University of Oklahoma in the Summer of 1958, Lecturer, Assistant Instructor at the Ohio State University from 1959 to 1961, and he has been a professor at the University of Wisconsin from 1961 until the present.

Professor Filley's major consultation activities have involved a major U.S. Business forms company, a semiconductor manufacturer, an orthodpaedics supply company, a mutual insurance company, a water treatment products company, a University student affairs division, and a special machine company.

He has been active in training managers at all organizational levels in private and university programs. He has participated regularly in programs at the Extension Division, UW; the Bureau of Industrial Relation, U of Michigan; the Center for Management and Technical Programs, U of Colorado; and the Industrial Relations Center, California Institute of Technology, Management Research Corporation, Boulder, Colorado.

Unique and special topics Professor Filley has covered include organization growth, conflict resolution and problem solving; management by objectives, organization design, small group behavior, leadership skills, time management, and interpersonal skills.

He has several books and articles published and has two books in progress.

WILLIAM J. GEPHART

Dr. Gephart joined the Phi Delta Kappa professional staff in July of 1966 to initiate and implement the newly created Research Service Center which includes the School Research Information Service developed under a Kettering Foundation grant.

His background and publication in the special fields of education research evaluation, educational administration, and counseling includes his Directorship of Research, School of Education, University of Wisconsin-Milwaukee (1963-1966) and activities at The Ohio State University (1961-1963) focused upon the stimulation and facilitation of research. His fifteen years of educational experience spans classroom instruction as well as counseling and administrative work in high schools in Michigan and Ohio, (1953-1961), and the U.S. Air Force, (1947-1949).

Concurrently with teaching, he served administrative roles in these institutions as assistant to the Associate Dean of Instruction and Research, (The Ohio State University), and as a member of the School of Education Administration, (University of Wisconsin-Milwaukee).

He received B.S. and M.Ed. degrees at Wayne State University in 1953 and 1959 respectively, and his Ph.D. in Education from The Ohio State University in 1965, while serving as Director of Research at the University of Wisconsin-Milwaukee and while conducting, as principal investigator, a United States Office of Education project involving the development of an instrument for the evaluation of research reports.

Dr. Gephart became a member of The Ohio State University Chapter in 1961, and served as Faculty Advisor to the Campus Chapter at the University of Wisconsin-Milwaukee in 1965 and 1966.

He is married and has two sons.

CHARLES E. GOLDSMITH

Has three degrees in theology, and a Ph.D. in clinical psychology from Boston University. His pastoral and teaching experiences are extensive. He has been Chaplain at Deaconess Hospital since 1962, conducts a chaplaincy training program there, teaches psychology to Deaconess student nurses in the diploma school, and is administrative coordinator of the Hemodialysis Unit. He spends considerable time in clinical practice in the patient care setting. He is past-president of the Milwaukee County Association for Mental Health. His dissertation was on "Attitudes of Older People Toward Dying," and he gives frequent presentations on this topic to professional groups in Wisconsin. He is the staff psychologist for the Wisconsin Regional Medical Program, Nurse Utilization Project, and has a joint faculty appointment at UWM in the Department of Psychology and the School of Nursing, and is on the faculty of Nashotah House Seminary. He is a member of the Board of Directors of the Mental Health Planning Committee of Milwaukee County.

David Gustafson

David Gustafson is an associate professor of both industrial engineering and preventive medicine. He is also associate director of both the Advisory Center for Medical Technology and Systems and the Health Services Administration Program and is a technical advisor to the Governor's Health Program and Policy Task Force. He is also director of the Medical Decision Making Research groups which has research grants for using computer medical diagnosis, designing health manpower systems, developing and testing health planning strategies and evaluating utility assessment procedures.

Professor Gustafson, who received his Ph.D. from the University of Michigan, worked as an industrial engineer in several Michigan hospitals before coming to the UW.

He has published many articles in behavior decision theory, systems design and evaluation, and medical care research. His current research interests include developing strategies and tools for designing and evaluating social systems in general, and medical and urban systems planning in particular. He's also interested in the application of computers and statistical tools that will help people make better decisions.

In his spare time, Prof. Gustafson enjoys playing the guitar, running, and camping and water sports with his wife and their three young children.

W. Lee Hansen

W. Lee Hansen is at present a professor of Economics and Educational Policy Studies at the University of Wisconsin, Madison.

He received his B.A. in International Relations in 1950 from the University of Wisconsin, his M.A. in Economics in 1955 also from the university of Wisconsin, and his Ph.D. in 1958 in Political Economy from the Johns Hopkins University.

From 1955-56 he was an instructor in Economics at the John Hopkins University-McCoy College, was an Assitant Professor of Economics from 1958-1963, and an Associate Professor from 1963-1965 at the University of California, Los Angeles. He served as the Senior Staff Economist on the President's Council of Economic Advisers from 1964-1965. During 1965-1966, he was an Associate Professor of Economics and Educational Policy Studies at the University of Wisconsin.

Professor Hansen has had numerous books and articles published. His most recent article is titled Readings in Effective Teaching, forthcoming in Journal of Economic Education, published in 1973.

Ken Ingle

Ken Ingle received his B.A. in Physics from DePauw University, Greencastle, Indiana in 1960, did graduate study in physics at Washington University, St. Louis in 1960 and 1961, and was employed as a physicist in aerospace industry, mostly designing and testing spacecraft solar sensors and doing heat-transfer and irradiction analyses from 1961 to 1965.

From 1965 to 1967 he worked as a Peace Corps Volunteer, teaching physics and mathematics in the Southern Philippines. He did graduate study in industrial engineering at the UW from 1967 to 1969, specializing in system design and served as a consultant on system design procedures for the Governor's Commission on Education, for the State of Wisconsin from 1969 to 1970.

At present he is Director of the Governor's committee on Special Learning, and is running two community-based projects in Wisconsin to design Child Development Systems.

James T. Johnston

James T. Johnston is president of Ideal Systems, Incorporated, a management consulting firm whose purpose is to establish programs of systems design in organizations of all kinds. His firm uses the systems design approach described in this course.

Mr. Johnston is a consultant to a wide range of organizations in rather diverse areas, such as architecture, banking, computers, consulting, education, government, health care, manufacturing, newspapers, tobacco, transportation, and many others. He is an International Instructor in Work Design and systems planning, having taught in Belgium, Canada and England as well as the U.S.

Prior to the presidency of Ideal Systems, Mr. Johnston held a variety of positions in the systems field, with such organizations as the University of Wisconsin, the University of Michigan, his alma mater, the Boeing Company and Chrysler Corporation, resulting in over a decade of experience in systems design.

His publications include _IDEALS Concept Cases and Programs_ (1970) and _Design Concepts in Information Systems Design_ (1972)

WILLIAM R. KELLETT
MENASHA, WISCONSIN

William R. Kellett graduated in 1922 with a degree in chemical engineering from the University of Wisconsin.

Mr. Kellett devoted 41 years to a career in the pulp and paper industry which included the presidency of Kimberly-Clark Corporation, Neenah, Wisconsin, from 1959 to 1964 when he retired. He was also a director of the firm from 1945 until 1969.

He has been a Trustee of the Wisconsin Alumni Research Foundation (WARF) for 20 years and president from 1964 to 1968. This private organization funds research programs entirely for the University of Wisconsin through a patent licensing and investment program.

Kellett was awarded an honorary degree of Doctor of Science from the University of Wisconsin in 1965 and received an honorary Doctor of Laws degree in 1966 from Carroll College. In 1971 he was presented with a Distinguished Civic Service Award by the University of Wisconsin-Oshkosh and in March 1972 was made an honorary member of the University of Wisconsin-Oshkosh chapter of Beta Gamma Sigma in recognition of his Industrial Management and Public Service contribution.

In 1965 Mr. Kellett was named to head the Governor's Committee on Improved Expenditure Management, a task force study group which recommended vast changes in practices and procedures within state agencies.

In 1966 Mr. Kellett was named Chairman of the Committee on Reorganization of Wisconsin State Government. This bipartisan committee made comprehensive recommendations to the 1967 legislature to provide complete functional reorganization of the executive branch of the State of Wisconsin. In July 1967 the recommendations were enacted into law, resulting in a reduction of state agencies from 96 to 28.

Early in 1969 Mr. Kellett accepted an invitation from Governor Knowles to organize a Citizens Task Force on Education to study in depth the state's financial and administrative relationship with education at all levels, including the mutual needs of the state and nonpublic schools. More than 600 men and women and 3,000 students saw fit to volunteer their services in this effort. The final report was submitted in November 1970. Bills have been drafted for the consideration of the governor and legislature. When implemented, these recommendations could set guidelines for educational reform for the decade ahead.

Philip Lambert

Professor Lambert received his B.A. from the University of California - Berkeley in 1949, and his M.A. and Ph.D. also from the University of California - Berkeley in 1950 and 1955 respectively.

Over the years Dr. Lambert has held many significant appointments. In recent years these have included serving as a research consultant to the State of Illinois - Public Instruction Gifted Child Project (1964-1970), a consultant for the University of Illinois on Far Eastern Educational Programs (1965-1970) and a research consultant to the Cooperative Educational Research Laboratory, Kenilworth, Illinois (1966-1969). From 1966-1967 he was involved with manpower surveys for Cooperative Educational Research Laboratory at the University of Illinois in preparation for President Johnson's International Education Bill: a) Holland; b) Switzerland; c) France; d) Athens; and e) Czechoslovakia. From 1967-1968 he served as a consultant to State University College, Oswego, New York, and in 1967 as a consultant to Shawano School District, in 1968 as a consultant to LaBelle Industries, Oconomowoc, Wisconsin and as consultant to the Far West Regional Educational Laboratory, Berkeley, Cal. From 1968-1970 he served as a consultant to Senator Gaylord Nelson on education and in 1970 was appointed a licensed psychologist by the Wisconsin Department of Licensing.

His major professional experiences have included the positions of teacher, Vice Principal, Principal, Curriculum Coordinator, Assistant Superintendent and Associate Superintendent in Orinda, California between 1950 and 1957. From 1955-1957 Dr. Lambert lectured in Educational Administration at the University of Cal., Berkeley, was Director of U.C.L.A. Experimental School and Assistant Professor at the Univ. of Cal. Los Angeles from 1957-1959, Director of the University Elementary School and Associate Professor at the Univ. of Wis., Madison from 1959-1962, Professor at the University of Wis., from 1962-1964, Professor and Chairman of the Department of Educational Psychology at the Univ. of Wis., from 1963-1965, Professor and Director of Instructional Research Laboratories, at the Univ. of Wis. from 1964-1969, Professor of Educational Psychology, Univ. of Wis., from 1969-1970, and Professor and Chairman of the Department of Educational Psychology, Univ. of Wis., Madison, from 1970 until the present.

He has had numerous books, articles and monographs published, his most recent book being Educational Psychology: Atypical Child. (Feb. 1 1972).

GERALD NADLER

Gerald Nadler is Professor and Chairman, Department of Industrial Engineering (IE) at the University of Wisconsin, Madison. He was Chairman of the University-wide Operations Research and Administrative Science Committee (1964-68), and serves on several other university and engineering committees, such as the executive committee of the Industrial Relations Research Institute. Until June, 1964, he was Professor and Chairman, Department of IE at Washington University, St. Louis, Missouri. He had been with Washington University, starting as an Assistant Professor since he received his PhD degree in IE from Purdue University in 1949. In addition to undergraduate and graduate teaching, he is active in adult and extension education with several annual intensive courses in the U.S. and Canada. His industrial experience started with the Central Wisconsin Canneries and extends through a vice-presidency of general operations for the 400 employee Artcraft Mfg. Co. (St. Louis and Pittsburgh). He serves as a member of the Board of Directors of Intertherm Inc. (St. Louis). He is Chairman of the Board of Ideal Systems, Inc., a consulting firm whose purpose is to encourage the utilization of the IDEALS Concept and Work Design. Some of his or ISI's clients include St. Cloud Hospital (Minn.), University of Puerto Rico, University of Wisconsin Physical Plant Division, Boeing Co., Southwestern Bell Tel. Co., U.S. Public Health Service, 1st Wis. Natl. Bank of Milwaukee, Cummins Engine Co., Natl. Center for Education R & D, Army Mgmt. Engr. Training Agency, and many others all over the world. He is a registered professional engineer (Missouri and Wisconsin), and serves as an arbitrator.

Dr. Nadler is active in research, and has produced several contributions in IE (such as the patented UNOPAR), health systems design and research, planning large scale complex systems, and system design strategy. He is spearheading interdisciplinary research and applications, such as developing target health care systems, introducing engineering concepts in foreign area studies, and serving as principal investigator of a Planning R & D Contract with the Wisconsin Regional Medical Program. He formulated the concepts, program, and strategy of the IDEALS Concept. He writes extensively about his research, industrial, and consulting activities with over 100 articles in a wide range of professional and trade journals in many countries, and five books, most of which are translated into six other languages. His latest book is Work Design: A Systems Concept, published by Richard D. Irwin, Inc., 1970. Dr. Nadler has delivered over 400 lectures at many national and international universities, conferences, and meetings, and was Visiting Professor at the University of Birmingham in England for six months in 1959, at Waseda University in Tokyo for five months in 1963-64, and at Indiana University for a semester in 1964.

He is a member of the American Association for the Advancement of Science, Amer. Soc. of Engr. Education, Amer. Assoc. of Univ. Professors, Amer. Inst. of IE, and the Inst. of Mgmt. Sciences. He is active in these professional societies, having served in many capacities, such as AIIE Director of Professional Development, Vice-Pres. for Mgmt. Engr. of the Soc. for Advancement of Mgmt., and Chairman of the IE Division of ASEE. He is listed in four Who's Who and biographical directories. He serves on several editorial boards for national and international journals. He served three years as an elected member of the Ladue Board of Education in St. Louis County. He has been elected to the honorary societies of Alpha Pi Mu, Pi Tau Sigma, Sigma Xi, and Tau Beta Pi, AIIE elected him to the grade of FELLOW in 1969, Hospital Management magazine gave him its editorial award for 1966, and The Society for Advancement of Management awarded him the Gilbreth Medal for 1961.

Gordon Robinson

Associate Professor Gordon Robinson, is associate chairman of the IE department UW. Prof. Robinson's research interest encompass man-machine systems, human performance modeling, visual search and attention mechanisms, alchohol stress, philosophical issues concerning society and technology, educational systems' design and evaluation, and information systems design. Prof. Robinson's current research efforts are concerned with human performance and automobile-driver systems, educational systems, and information systems.

Before coming the the UW, he was a member of the faculty at the University of California, Berkley. Prof. Robinson lists his major outside interest as sportscars.

He received his Ph.D. in Instrumentation Engineering and Engineering Psychology from the University of Michigan .

HOWARD WAKEFIELD
Professor of Educational Administration
Director, Cooperative Educational
Research & Services (CERS)

Professor Wakefield was born in Santa Monica, California, on August 25, 1917. He was educated at the University of Cincinnati (B.S. in Education; B.Ed. 1942; M.Ed. 1949) and Teachers College, Columbia University (Ed.D. 1953), concentrating in educational administration.

Before joining the Wisconsin faculty in 1958, he was a faculty member at Ohio State University, 1953-56, and at the University of Minnesota, 1956-58.

He has published widely in research monographs, journals, and books.

He is member of the Council of Educational Facility Planners, American Institute of Planners, and Phi Delta Kappa.

Professor Wakefield teaches and directs research on "Educational Planning". As director of CERS, he works with Wisconsin school systems preparing, analyzing, testing, and evaluating plans and projects. He directs field laboratory work of advanced students and arranges participation of faculty members in such studies.

Professor Wakefield is a licensed pilot. He is married to the former Ocie Collier and is the father of a son and daughter.

Burton A. Weisbrod

Burton Weisbrod is at present a professor of Economics at the University of Wisconsin, Madison.

He received his B.S. in Management in 1951 from the University of Illinois, his M.A. in Economics in 1952 from Northwestern University and his Ph.D. in 1958 in Economics also from Northwestern University.

From 1954 to 1955 he lectured in Economics at Northwestern University. From 1955 to 1957 he was an instructor in Economics at Carleton College, and was an instructor in Economics from 1957 to 1958, an Assistant Professor of Economics from 1958 to 1962, and Associate Professor of Economics from 1962 to 1964 for Washington University. He was visiting lecturer with rank of Associate Professor for Princeton University from 1962 to 1963, and Associate Professor from 1964 to 1966, Professor, Staff Member, Institute for Research on Poverty, and member of the Health Economics Research Center from 1966 to the present at the University of Wisconsin. In the Summer of 1970 he was a Senior Fulbright Lecturer at the Universidad Autonoma de Madrid in Spain. In 1969 and 1970 he was a Guggheim Fellow and in 1971 and 1972, a Ford Faculty Fellow.

Professor Weisbrod has had numerous books and articles published. His most recent book is titled Benefits, Costs, and Finance of Public Higher Education, published in 1969.

The University of Wisconsin

PROJECT ON DESIGN STRATEGY TRAINING
FOR EDUCATIONAL SYSTEMS

1513 UNIVERSITY AVENUE
MADISON, WISCONSIN 53706
PHONE: (608) 262-2666

15 May 1972

Dear Sir:

The enclosed description of a program financially supported by the Office of Education (HEW) may be of special interest to the members of your organization.

The type of person whom you should consider for participation is one who is responsible for and involved in the development of educational products and procedures in any area, at any level including, but not limited to:

....curriculum development
....administration
....special programs
....finance and budgeting
....facilities planning
....ancillary services
....pupil services

Transportation and room and board costs will be covered by the program budget for each attendee at the course.

Please note the early (9 June) application deadline. Thank you for your prompt attention.

Very sincerely yours

GNadler

Gerald Nadler, Ph D
Project Director

Enclosure

TRAINING IN A STRATEGY FOR DEVELOPING EDUCATIONAL PRODUCTS AND PROCEDURES

This training program will consist of education and application in a general development approach or strategy that has been successfully applied in many fields, including industry, health care, banking and finance and, of course, education. The focus of this program, sponsored by the Office of Education (HEW), is on educational professionals engaged in the development, design or planning of educational products and procedures.

Summary of the Program

1. Type of applicants desired: Any educational professional engaged in planning, development, or design in any area of education -- curriculum development, special programs, administration, finance and budgeting, facilities planning, ancillary pupil services -- at any level, from kindergarten through university to continuing and adult, who has the authority to implement products and procedures.

2. A. Each applicant must preselect a project on which to work during the program. This project should be one that the applicant is actually planning to start soon, in the normal course of his duties.

   B. Each applicant must also submit with his application, if possible, a recently completed project to which the applicant has contributed a major portion of the total effort. These projects will be used as comparisons for determining program effectiveness.

3. Fifty applicants will be selected for the program from all those who apply. Twenty-five will attend the training session; the other twenty-five will be members of a comparison group.

4. The twenty-five applicants selected to attend the training sessions will have the following schedule:

   A. The training sessions will be in Madison, Wisconsin as follows:

      a. Main training & workshop - 3 wks. from 31 July to 18 Aug. 1972.
      b. Review & workshop - 2 days, 26&27 Oct. 1972
      c. Review & wrap-up - 3 days, 17, 18,&19 Jan. 1973.

COURSE APPLICATION

A STRATEGY FOR DEVELOPMENT OF EDUCATIONAL PRODUCTS AND PROCEDURES

(Please type or print-attach sheets as necessary)

Name ______________________________ Date of Birth ____________

Highest Degree Earned ________ From (Institution) ______________ Year ________

Your Organization ______________________________

Your Business Address ______________________ Phone (   ) __________

Your Title ______________________ How Long Held? ________

To whom do you report (Name & Title) ______________________________

List the products of your organization ______________________________

Describe briefly your work ______________________________

____

______________________________ Years experience in this type of work ________

Indicate % of time on: Research ________, Teaching ________, Administration ________,

Product or Procedure Development ________, Dissemination ________,

Other (Specify) ______________________________

State Briefly your professional goals for the next five years ______________________________

____

____

Professional organizations to which you belong (attach resume if needed) ______________________________

____

____

Previous formal training (& dates) in design, development or planning methodology ______________________________

____

Describe the project on which you anticipate working during the program (Be specific): ______________________________

____

____

____

____

Appendix B

The following questions are intended as pre-course measure of certain traits. There is no right or wrong answer to these questions. Your 'free' response will be the most appropriate response.

Please note that there are questions covering many different and opposing points of view; you may find yourself agreeing strongly with some of the statements, disagreeing just as strongly with others, and perhaps uncertain about others; whether you agree or disagree with any statement, you can be sure that many other people feel the same way as you do.

Please check each and every item by circling:

SA	if you strongly agree
MA	if you agree moderately
A	if you agree a little
D	if you disagree a little
MD	if you disagree moderately
SD	if you strongly disagree

Example

It is pleasant weather in Madison today [✓ SA] MA A D MD SD

1. I am often the last one to give up trying to do a thing. SA MA A D MD SD

2. There is usually only one best way to solve most problems. SA MA A D MD SD

3. I prefer work that requires a great deal of attention to detail. SA MA A D MD SD

4. I often become so wrapped up in something I am doing that I find it difficult to turn my attention to other matters. SA MA A D MD SD

5. I dislike to change my plans in the midst of an undertaking. SA MA A D MD SD

6. I never miss going to church. SA MA A D MD SD

7. I usually maintain my own opinions even though many other people may have a different point of view. SA MA A D MD SD

8. I find it easy to stick to a certain schedule, once I have started it. SA MA A D MD SD

9. I do not enjoy having to adapt myself to new and unusual situations. SA MA A D MD SD

10. I prefer to stop and think before I act even on trifling matters. SA MA A D MD SD

11. I try to follow a program of life based on duty. SA MA A D MD SD

12. I usually find that my own way of attacking a problem is best, even though it doesn't always seem to work in the beginning. SA MA A D MD SD

13. I am a methodical person in whatever I do. SA MA A D MD SD

14. I think it is usually wise to do things in a conventional way. SA MA A D MD SD

15. I always finish tasks I start, even if they are not very important. SA MA A D MD SD

16. I often find myself thinking of the same tunes or phrases for days at a time. SA MA A D MD SD

17. I have a work and study schedule which I follow carefully. SA MA A D MD SD

18. I usually check more than once to be sure that I have locked a door, put out the light, or something of the sort. SA MA A D MD SD

19. I have never done anything dangerous for the thrill of it. SA MA A D MD SD

20. I believe that promptness is a very important personality characteristic. SA MA A D MD SD

21. I am always careful about my manner of dress. SA MA A D MD SD

22. I always put on and take off my clothes in the same order. SA MA A D MD SD

23. Just about anything in the world could be changed for the better. SA MA A D MD SD

24. I think I have a good sense of humor. SA MA A D MD SD

25. When solving problems, thinking of lots of possible ideas is better than sticking with just one that seems right. SA MA A D MD SD

26. We can improve our ability to think of new ideas. SA MA A D MD SD

27. Creative thinkers do not spend time on wild ideas. SA MA A D MD SD

28. I often think about new ideas. SA MA A D MD SD

29. I think my ideas are about as good as anyone else's. SA MA A D MD SD

30. Unusual or wild ideas are usually of no help in solving a serious problem. SA MA A D MD SD

31. Just a few people have the mysterious ability to find really good, new ideas. SA MA A D MD SD

32. I think I am creative. SA MA A D MD SD

33. I often look for better ways of doing things. SA MA A D MD SD

34. If I try, I can think of ways to improve almost anything. SA MA A D MD SD

35. I am confident in my ability to think of new ideas. SA MA A D MD SD

36. I think I am adventurous. SA MA A D MD SD

37. People can learn to use their imaginations more than they already do. SA MA A D MD SD

38. It's best to make sure an idea is a good one before suggesting it to a group. SA MA A D MD SD

39. I am uncertain about accepting unusual or "way out" ideas. SA MA A D MD SD

40. Writers, scientists, and engineers need new ideas, but the average worker doesn't. SA MA A D MD SD

41. Sometimes I am afraid my ideas might be laughed at. SA MA A D MD SD

42. Wild ideas can sometimes lead to good ideas. SA MA A D MD SD

INSTRUCTIONS: Check all of the statements below which describe your attitudes and motivations.

____1. I think financial reward is the best incentive to good work.
____2. I am apt to pass up something I want to do when others feel that it isn't worth doing.
____3. I find it easier to identify flaws in the ideas of others than to think of other possibilities myself.
____4. It is hard for me to work intently on a problem for more than an hour or two at a stretch.
____5. I enjoy work in which I must keep trying out new approaches.
____6. I am fascinated by new ideas, whether or not they have practical value.
____7. My mind often gets so caught up in a new idea that I am almost unable to think of anything else.
____8. I thoroughly enjoy activity in which pure curiosity leads me from one thing to another.
____9. I enjoy trying out a hunch just to see what will happen.
____10. I never pay much attention to "crack-pot" ideas.
____11. I enjoy experiences where I can't know what is going to happen.
____12. I feel upset when little things happen that I had not planned on.
____13. I sometimes lose myself in experimenting with an idea that may have no practical value.
____14. My interest is often caught up in ideas that may never lead to anything.
____15. The presence of a group stimulates me to express myself.
____16. When I get a new idea, I drop everything to try it out.
____17. I sometimes get so intent on a new idea that I fail to do the things I ought to be doing.
____18. I enjoy work in which I must adapt my course of action as I go along.
____19. I am inclined to be "lost to the world" when I get started on an original idea.
____20. I enjoy tackling a job that I know involves many as yet unknown difficulties.
____21. I never feel really qualified when taking on a new job.
____22. I have a feeling of excitement when an idea I am working on begins to jell.
____23. I enjoy staying up all night when I'm doing something that interests me.
____24. I frequently try things which do not occur to others to try.
____25. I like to find ways of converting necessities to advantages.
____26. I am willing to risk suffering for the sake of possible growth.
____27. I see many problems to work on, much work to do.
____28. I sometimes become childishly enthusiastic about an apparently simple thing.
____29. I usually put a great deal of energy and zeal into my work.
____30. I resist accepting the accustomed ways to doing things unless I can prove to my own satisfaction that it is the best way.

DIRECTIONS

This schedule consists of a number of pairs of statements about things that you may or may not like; about ways in which you may or may not feel. Look at the example below;

A. I like to talk about myself to others.
B. I like to work towards some goal that I have set for myself.

Which of these two statements is more characteristic of what you like? If you like "talking about yourself to others" more than you like "working toward some goal that you have set for yourself" more than you like "talking about yourself to others", then you should choose B over A.

You may like both A and B. In this case, you would have to choose between the two and you should choose the one that you like better. If you dislike both A and B, then you should choose the one that you dislike less.

The pairs of statements on the following pages are similar to the examples given above. Read each pair of statements and pick out the one statement that better describes what you like or how you feel. Circle EITHER the A or the B corresponding to the statement, which best describes you.

1. A. I like to find out what great men thought about various problems in which I am interested.

   B. I would like to accomplish something of great significance.

2. A. Any written work that I do I like to be precise, neat, and well organized.

   B. I would like to be a recognized authority in some job, profession or field of specialization.

3. A. I like to tell amusing stories and jokes at parties.

   B. I would like to write a great novel or play.

4. A. I like to be able to come and go as I want to.

   B. I like to be able to say that I have done a difficult job well.

5. A. I like to solve puzzles and problems that other people have difficulty with.

   B. I like to follow instructions and to do what is expected of me.

6. A. I would like to be a recognized authority in some job, profession or field of specialization.

   B. I like to have my work organized and planned before beginning it.

7. A. I like to be able to do things better than other people can.

   B. I like to tell amusing stories and jokes at parties.

8. A. I like to accomplish tasks that others recognize as requiring skill and effort.

   B. I like to be able to come and go as I want to.

9. A. I like to be successful in things undertaken.

   B. I like to form new friendships.

10. A. I like to solve puzzles and problems that other people have difficulty with.

    B. I like to judge people by why they do something not by what they actually do.

11. A. I like to accomplish tasks that others recognize as requiring skill and effort.

    B. I like my friends to encourage me when I meet with failures.

12. A. I would like to write a great novel or play.

    B. When serving on a committee, I like to be appointed or elected chairman.

13. A. I would like to be a recognized authority in some job, profession, or field of specialization.

    B. I feel guilty whenever I have done something I know is wrong.

14. A. I like to do my best in whatever I undertake.

    B. I like to help other people who are less fortunate than I am.

15. A. I like to be able to do things better than other people can.

    B. I like to eat in new and strange restaurants.

16. A. I like to be able to say that I have done a difficult job well.

    B. I like to work hard at any job I undertake.

17. A. I like to read newspaper accounts of murders and other forms of violence.

    B. I would like to write a great novel or play.

18. A. I like to go out with attractive persons of the opposite sex.

    B. I like to be successful in things undertaken.

19. A. I like to work hard at any job I undertake.

B. I would like to accomplish something of great significance.

20. A. I would like to accomplish something of great significance.

B. I like to kiss attractive persons of the opposite sex.

21. A. I like to travel and to see the country.

B. I like to accomplish tasks that others recognize as requiring skill and effort.

22. A. I would like to write a great novel or play.

B. I like to attack points of view that are contrary to mine.

23. A. I like to help my friends when they are in trouble.

B. I like to do my best in whatever I undertake.

24. A. I like to be loyal to my friends.

B. I like to do my best in whatever I undertake.

25. A. I like to observe how another individual feels in a given situation.

B. I like to be able to say that I have done a difficult job well.

26. A. I like my friends to encourage me when I meet with failure.

B. I like to be successful in things undertaken.

27. A. I like to be one of the leaders in the organizations and groups to which I belong.

B. I like to be able to do things better than other people can.

28. A. When things go wrong for me, I feel that I am more to blame than any one else.

B. I like to solve puzzles and problems that other people have difficulty with.

29. A. Children get into trouble because their parents punish them too much.

B. The trouble with most children nowadays is that their parents are too easy with them.

30. A. Many of the unhappy things in people's lives are partly due to bad luck.

B. People's misfortunes result from the mistakes they make.

31. A. One of the major reasons why we have wars is because people don't take enough interest in politics.

B. There will always be wars, no matter how hard people try to prevent them.

32. A. In the long run people get the respect they deserve in this world.

B. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

33. A. The idea that teachers are unfair to students is nonsense.

B. Most students don't realize the extent to which their grades are influenced by accidental happenings.

34. A. Without the right breaks one cannot be an effective leader.

B. Capable people who fail to become leaders have not taken advantage of their opportunities.

35. A. No matter how hard you try some people just don't like you.

B. People who can't get others to like them don't understand how to get along with others.

36. A. Heredity plays the major role in determining one's personality.

B. It is one's experiences in life which determine what they're like.

37. A. I have often found that what is going to happen will happen.

B. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

38. A. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.

B. Many times exam questions tend to be so unrelated to course work that studying is really useless.

39. A. Becoming a success is a matter of hard work, luck has little or nothing to do with it.

B. Getting a good job depends mainly on being in the right place at the right time.

40. A. The average citizen can have an influence in government decisions.

B. This world is run by the few people in power and there is not much the little guy can do about it.

41. A. When I make plans, I am almost certain that I can make them work.

    B. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

42. A. There are certain people who are just no good.

    B. There is some good in everybody.

43. A. In my case getting what I want has little or nothing to do with luck.

    B. Many times we might just as well decide what to do by flipping a coin.

44. A. Who gets to be the boss often depends on who was lucky enough to be in the right place first.

    B. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.

45. A. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.

    B. By taking an active part in political and social affairs the people can control world events.

46. A. Most people don't realize the extent to which their lives are controlled by accidental happenings.

    B. There really is no such thing as "luck".

47. A. One should always be willing to admit mistakes.

    B. It is usually best to cover up one's mistakes.

48. A. It is hard to know whether or not a person really likes you.

    B. How many friends you have depends upon how nice a person you are.

49. A. In the long run the bad things that happen to us are balanced by the good ones.

    B. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

50. A. With enough effort we can wipe out political corruption.

    B. It is difficult for people to have much control over the things politicians do in office.

51. A. Sometimes I can't understand how teachers arrive at the grades they give.

B. There is a direct connection between how hard I study and the grades I get.

52. A. A good leader expects people to decide for themselves what they should do.

B. A good leader makes it clear to everybody what their jobs are.

53. A. Many times I feel that I have little influence over the things that happen to me.

B. It is impossible for me to believe that chance or luck plays an important role in my life.

54. A. People are lonely because they don't try to be friendly.

B. There's not much use in trying too hard to please people, if they like you, they like you.

55. A. There is too much emphasis on athletics in high school.

B. Team sports are an excellent way to build character.

56. A. What happens to me is my own doing.

B. Sometimes I feel that I don't have enough control over the direction my life is taking.

57. A. Most of the time I can't understand why politicians behave the way they do.

B. In the long run the people are responsible for bad government on a national as well as on a local level.

INVENTORY OF TOPIC INTEREST AND COMPETENCE

Please indicate your interest and competence in the following areas by circling an appropriate number between 1 through 7. For minimal interest or competence circle 1 and for maximal interest or competence circle 7. Use the blank lines at the end to include other areas that you desire.

	INTEREST	COMPETENCE
1. Educational Administration.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
2. Organizational methods	1 2 3 4 5 6 7	1 2 3 4 5 6 7
3. Curriculum and course development	1 2 3 4 5 6 7	1 2 3 4 5 6 7
4. Budgeting and Finance	1 2 3 4 5 6 7	1 2 3 4 5 6 7
5. Planning	1 2 3 4 5 6 7	1 2 3 4 5 6 7
6. System design	1 2 3 4 5 6 7	1 2 3 4 5 6 7
7. Business Operation	1 2 3 4 5 6 7	1 2 3 4 5 6 7
8. Implementation	1 2 3 4 5 6 7	1 2 3 4 5 6 7
9. Evaluation	1 2 3 4 5 6 7	1 2 3 4 5 6 7
10. Computer techniques	1 2 3 4 5 6 7	1 2 3 4 5 6 7
11. Data collection	1 2 3 4 5 6 7	1 2 3 4 5 6 7
12. Research methods	1 2 3 4 5 6 7	1 2 3 4 5 6 7
13. Instructional technology	1 2 3 4 5 6 7	1 2 3 4 5 6 7
14. Training programs	1 2 3 4 5 6 7	1 2 3 4 5 6 7
15. Group dynamics	1 2 3 4 5 6 7	1 2 3 4 5 6 7
16. Cost analysis	1 2 3 4 5 6 7	1 2 3 4 5 6 7
17. Accountability	1 2 3 4 5 6 7	1 2 3 4 5 6 7
18. Needs assessment	1 2 3 4 5 6 7	1 2 3 4 5 6 7
19. ________________	1 2 3 4 5 6 7	1 2 3 4 5 6 7
20. ________________	1 2 3 4 5 6 7	1 2 3 4 5 6 7

APPENDIX C
SESSION EVALUATION SHEET

SESSION ( )

Speaker: Date: Time:

Topic:

Please rate the instructor/instruction/any learning aids on the scale below by circling any number 1 through 7.

1. Instructor's knowledge of subject.	1 POOR	2	3	4	5	6	7 EXCELLENT
2. Organization of the presentation	1 POOR	2	3	4	5	6	7 EXCELLENT
3. Pertinence to overall topic (IDEALS Concept)	1 NONE	2	3	4	5	6	7 HIGH
4. Degree to which instructor motivated you to learn his topic.	1 NONE	2	3	4	5	6	7 HIGH
5. Relevence of material to your work in your organization.	1 NONE	2	3	4	5	6	7 HIGH
6. Overall effectiveness of presentation.	1 VERY LOW	2	3	4	5	6	7 VERY HIGH
7. Degree to which reading assignment and/or handouts helped your understanding of the topic.	1 NOT AT ALL	2	3	4	5	6	7 VERY MUCH
8. Degree to which audio or visual aids helped your understanding of the topic.	1 NOT AT ALL	2	3	4	5	6	7 VERY MUCH

9. (a) The level of presentation was:
- ( ) Too theoretical
- ( ) Theoretical but good
- ( ) A combination of theory and application.
- ( ) Applied but good
- ( ) Too applied

(b) The lecture should have been:
- ( ) More applied.
- ( ) More theoretical
- ( ) As it was.

(c) Comments regarding level: ______________________________

____

10. Comments and suggestions (e.g. strong or week points of the session or speaker, etc.) Use back as necessary.

____

____

____

APPENDIX D

Session Evaluation Summary

Speaker: Professor Nadler Date: Friday Aug. 4, 1972

Topic: Illustration of Example up thru Step 2 and Review.
Step 2 IDEAL system Development II

Question	1	2	3	4	5	6	7	Total	Mean	Var.
Instructors Knowledge	0	0	0	0	0	4	18	22	6.82	.15
Orga. of Presentation	0	0	1	0	7	8	6	22	5.82	.97
Pertinence to I.C.	0	0	0	0	1	8	13	22	6.55	.34
Extent Motivated	0	0	1	3	5	8	5	22	5.59	1.24
Relevance to Organization	0	0	0	3	5	7	7	22	5.82	1.06
Overall Effectiveness	0	0	1	2	3	11	5	22	5.77	1.08
Assignment/Handouts	0	1	1	2	5	7	4	20	5.40	1.74
Visual Aids	1	0	3	0	7	5	5	21	5.24	2.47
Level of Presentation	1	1	15	4	0			21		
Lecture Wanted to be...	3	0	16					19		

General Comments:

Great. Thank you, I am now ready to read the book.

Looking at complete system again was a help.

Big improvement,
close to target.

Usual good job on function determination plus broad statements, but still need sharper definition and illustration of other points on process. Good and helpful--served as an excellent second review.

Sometime it might pay-off to have us at least write down what we think a response should be before giving it to us. It might lead to a feeling of involvement in the lecture beyond listening-questioning. The pressure then would be on to make a decision as a listener.

This presentation clarified the questions that had been

Excellent presentation.

I agree, theory is helpful, but like cough medicine, the dosage makes a difference.

I have a feeling a rereading of 21-22 will help along with putting things to actual use.

More application needed.

WEEKLY EVALUATION QUESTIONNAIRE II

Please make your comments specially related to this week. Be specific wherever you can.

1. Comment on the outside lectures (Delbeq, Ingle, DeVault, Kellet, Gustafson, Goldsmith & Filley) in terms of:

a) their relation to the IDEALS Concept & this course

b) their relation to your own work

c) other

2. Comment on the course project in terms of:

a) how it helped you learn the IDEALS Concept

b) how the IDEALS method works in "Reality"

c) your group's work in relation to the other groups

d) other

3. Comment on your understanding of what has been going on in the course.

4. Suggest what changes should have been made or should be made to facilitate your understanding in:

a) sequence

b) lectures

c) workshops

d) other

5. How much of the materials covered so far can be used with what you would be doing in your job.

1	2	3	4	5	6	7
none						all

6. How useful the course project was.

1	2	3	4	5	6	7
little						much

Comments and suggestions:

7. List two strong points in the course (list in order):

)

)

8. List two drawbacks in the course during the week:

)

)

. Any other observations

APPENDIX F

WEEKLY EVALUATION QUESTIONNAIRE I

The purpose of evaluation is "not ~~be~~ TO prove, but improve". Please be specific in your remarks. If something is good, we would like it known too. Your comments should cover the entire week.

1. What changes should be made in the sequence of the lectures.

2. Check, what you think would be more appropriate.

	More time be spent	Less time be spent	As it is
a. Nadler's lectures	______	______	______
b. Gephart's lectures	______	______	______
c. Johnston on Function expansion	______	______	______
d. Robinson's Case illustration	______	______	______

Comments:

3. How much the materials covered so far can be used with what you would be doing in your job.

____	____	____	____	____	____	____
1	2	3	4	5	6	7
none						all

4. How useful the workshops were:

____	____	____	____	____	____	____
1	2	3	4	5	6	7
little						much

Comments and suggestions:

5. Comment on your understanding of what has been going on in the course.

6. Suggest what changes should have been made or should be made now to facilitate your understanding:

7. List two strong points in the course (list in order):

(a)

(b)

8. List two drawbacks in the course so far:

(a)

(b)

9. Comments on Evaluation activity:

10. Comments on books/ reading assignments/classroom facilities:

11. Comments on accomodation, food etc.

12. Any other observation(can be outside course too):

APPENDIX G

FINAL EVALUATION SHEET

The purpose of this three weeks course is to prepare educational professionals who can use IDEALS concept in designing their products and procedures. Please keep this objective in view while answering questions. Thanks for your cooperation.

(1) Degree to which you learned IDEALS concept(mostly in the lectures of Nadler and Johnston.).

____	____	____	____	____	____	____
1	2	3	4	5	6	7
none						v. much

(2) Degree to which you benefitted from the course project on designing a library.

____	____	____	____	____	____	____
1	2	3	4	5	6	7
none						v. much

(3) How useful were the workshops in helping you to understand IDEALS concepts.

____	____	____	____	____	____	____
1	2	3	4	5	6	7
not at all						v. much

(4) How well do you think you can teach others (e.g. in your organization) about IDEALS concept.

____	____	____	____	____	____	____
1	2	3	4	5	6	7
not at all						v. well

(5) How well did the following units helped you to understand and implement I.C. methodology.

Clasen	____ 1	____ 2	____ 3	____ 4	____ 5	____ 6	____ 7
Delbecq	____ 1	____ 2	____ 3	____ 4	____ 5	____ 6	____ 7
Delp	____ 1	____ 2	____ 3	____ 4	____ 5	____ 6	____ 7
DeVault	____ 1	____ 2	____ 3	____ 4	____ 5	____ 6	____ 7
Gephart	____ 1	____ 2	____ 3	____ 4	____ 5	____ 6	____ 7
Gustafson	____ 1	____ 2	____ 3	____ 4	____ 5	____ 6	____ 7
Filley	____	____	____	____	____	____	____

6) Comment on any of the units in question 5

7) Comment on your expectations in attending this course, and to what extent they are or are not met. Be specific.

8) What is your opinion about all aspects of the I.C. Do you foresee its potential in your organization? Compare I.C. with whatever methodology you already know. (Please answer all parts and be specific).

9) Also rate I.C. by checking the following:

______	______	______	______	______	______	______
1	2	3	4	5	6	7
it is not better than what i know			about as good as what i already know			is definitely better than what i know

0) What changes do you anticipate in the project on which you will work as a result of attending this course.

1) List two strong points of this course as you see it now.

(a)

(b)

2) List two weakest points of this course as you see it now.

(a)

(b)

(13) Your comments on the length (3 weeks) of this course, class periods, coffee breaks, evening sessions etc.

(14) Comment on other project staff (Jim Thomson, Tej Pandey, Jim Schultz). How could they be of more help?

(15) Through what channels did our announcement made its way to you. Please use an arrow diagram.

(16) Comment on each of the following with regard to their contribution in helping you to broaden your understanding of the educational context within which the IDEALS concepts are to be used.

(a) Hanson & Weisbrod

(b) Bush

(c) Robinson

(d) Ingle

(e) Goldsmith

(f) Kellet

(g) Wakefield

APPENDIX H

2 Day Workshop System

Possible Functions (suggested by group members)

Get feedback for attendee project

Answer attendee questions

*Determine level of project progress (attendee project)

Encourage follow-through on part of attendees

Clarify I. C. process

Assess degree of I.C. utilization

Reinforce enrollees

Assess degree of I.C. success

Determine final direction of attendee project

Determine final direction of OE project

Stimulate initiation of new projects for attendees

Demonstrate to director that some results have been achieved

Provide advance I.C. training

Motivate attendees

Determine acceptance in attendees organization

Stimulate cooperative projects among attendees

Plan Jan. 3 day workshop

Determine transferability among attendee projects

**Present reports on process

Solve attendee problems while working on projects

Solve education problems

Analyze cause of failures

Provide suggestions on basic course organization
(whole OE project and how change course)

Provide competent educational system designers

Provide organization change agents

Goal Improve education

Determine of I.C. on educational planning

Develop leadership traits

Have dialogue between attendees and staff

Develop long term evaluation of impact of OE project
(possibly result in new OE project)

Renew relationships among attendees

Determine change in attendee attitudes

Compare comparison with attendee group

Review contribution of guest speakers

Stimulate contribution of guest speakers for future
Enhance learning results in attendee organizations
Identify specialized needs for I.C. trainees (possibly related to Delbecq or DeVault topics)
Review weekly evaluation of 3 week course.
Enhance personnel performance in attendee organization

Unique function of 2 day workshop system is:
Present reports on progress
Present information about project progress
Learning about progress on projects
Determine level of project project
Determine direction of attendee project
Motivate completion of project
Implement attendee project in own organization
Develop attendee competency towards IDEALS Concept
Provide competent I.C. education systems designers
Provide competent education systems designers **Project Level
Provide organizational (education) change agents
PLAN educational change
Implement educational changes

**Process of expansion helps to eliminate the implicit assumptions and limitations that people carrying with them so that in system design things are explicit and can gain "new" perspective through largest possible solution space.

Limitations

Function: Motivate completion of projects.

Inputs:
1. Attendees
2. Organizations problems
3. Partial project reports
4. 3-week course

Output: None

Sequence: 26-27 Oct.(2 days)

Environment: Madison

Physical Catalysts: None

Human Agents: None

Information Catalysts: None

Regularities

Inputs:
1. Need for assistant
2. Management problems
3. In writing
4. New attitudes

Sequence: 1. Weekdays

Environment:
1. Cool weather
2. Meeting in Lowell Hall

Broad Statements of Ideal Systems

Rank	Weight	
1	146	1. Individual conferences
3	97	2. Small group seminars
	21	3. Have no outside speakers
	13	4. Conference calls
	33	5. Have GN and JTJ present throughout (means: don't like switching back and forth between the two)
	32	6. Have very little lecture (more practice)
	19	7. Survey attitudes after practicing
	28	8. Firm commitment to entire 2 days
8	50	9. Submit notes, questions, problems to GN and/or JTJ prior to meeting
2	117	10. Cover (reinforce) hazy subject matter.
	15	11. Four 1½ hour session per day
	27	12. Record class evaluation/reaction to attendee reports (feedback to attendees)
		13. Tape record sessions for evening review
	19	14. Have minutes taken for report to each attendee
6	52	15. GN or JTJ evaluation of individual project
10	38	16. Provide format for status report, prepared beforehand
	23	17. Match reports with experts for reaction to project progress
7	51	18. Arrange college credit for project
5	55	19. Publish casebook of projects; share profits as royalties
	16	20. Become consultants in own localty
	9	21. Help each attendee get federal grant
	25	22. Have each attendee provide a survey of organizational reactions to project
	11	23. Award prize (free trip to Washington) for best progress
	27	24. Publish project reports only if finished by publication deadline
	13	25. Free consulting from GN and JTJ for best progress
	25	26. Joint publication with GN, JTJ and attendee with best project
4	56	27. Have GN/JTJ send letter of commendation to organization of best progress
	12	28. Publish best people as recommended consultant list
	29	29. Invite best people to consult at next three week course
9	43	30. Have GN/JTJ available by phone/letter for consulting

prior to follow-up session

a. will take these ideas and design 2 day workshop
b. will mail to attendees for comments

APPENDIX I

Name ______________________

FINAL EXAM

Multiple Choice

1. The first stage of the IDEALS Concept is:
   (a) developing the Ideal System
   (b) gathering information about the situation.
   [✓ (c) determining the function.]
   (d) formulating a system

2. The FIST is used as a :
   (a) model of the existing system.
   (b) stimulus of creativity.
   (c) solution to the problem
   [✓ (d) guide to the recommended solution.]

3. The feasible ideal system target should be selected for:
   (a) Regularity or ideal conditions only.
   [✓ (b) All the conditions the proposed system will include.]
   (c) Most of the conditions the proposed system will include.
   (d) the real-life conditions of the proposed system.
   (e) None of the above.

4. "Human agents" is the seventh system element because:
   (a) they are the least important of all elements.
   (b) the hopper model may be developed without defining this element.
   (c) The previous elements in a system are usually specified before this one.
   (d) Human agents are not important until the system is actually constructed and installed.
   [✓ (e) Of completely arbitrary reasons.]

5. When trying to determine the function of a system, the best thing to do is:
   (a) gather information.
   (b) do a function expansion.
   [✓ (c) don't worry about it.]
   (d) search for the ideal system.

6. In the IDEALS Concept strategy, information is usually gathered
   (a) Immediately after the area of study is identified.
   (b) When it is needed to answer questions about how the FIST can be implemented.
   (c) When any member of the group feels more detail is needed.
   [✓ (d) Whenever any question arises.]

7. A physical catalyst of a system
   (a) determines how the function is achieved.
   (b) converts inputs to outputs and becomes a by-product.
   (c) aids in conversion of inputs to outputs but does not become a part of the outputs.
   (d) is the feedback of an input into the system.

8. "Every system is part of a larger system" is
   (a) a stimulator for designing ideal systems
   (b) a financial statement showing where money goes
   (c) a system "truism" accepted on logical premises.
   (d) a guide for developing functional components.

9. Control
   (a) is a time related process which seeks to maintain a dimension of a system element.
   (b) is a mathematical model which describes reaction.
   (c) seeks to eliminate the human element.
   (d) is a weakness in any system.

10. The conventional design strategy is nearly identical to the
   (a) operating and controlling strategy
   (b) ideals concept strategy
   (c) research strategy
   (d) All of the above
   (e) None of the above

11. Which of the following is not a guide for expanding the function?
   (a) Identify the most immediate or unique function.
   (b) Each function statement must be related to and be a higher level purpose of the system which started the expansion.
   (c) Function statements should be general but limiting.
   (d) Expand the function well beyond any possibility for selected function.
   (e) None of the above.

12. What are stimulator lists used for in systems design?
   (a) Trouble-shooting on malfunctioning systems.
   (b) To find out how the system is to be installed.
   (c) Specific idea stimulators for developing ideal systems.
   (d) To see if all the parts of the system are feasible with today's technology.

13. The IDEALS Concept is:
   (a) a process used to design a new system
   (b) a systematic design strategy applicable to contemplated and present systems.
   (c) a technique used to determine the most optimal system, but one which is also impossible to achieve technologically and economically.
   (d) a technique used in work design.

14. Which of the following best describes the state dimension of a system element?
   (a) predicted acceptance by government.
   (b) usable portions of completed research.
   (c) anticipated arrival at a planned stage.
   (d) measurement of physical usefulness.

15. The process which assigns to each of several alternatives numbers which represent their value is called
    - (a) alternative assignment
    - (b) problem solving
    - (c) evaluation
    - (d) decision making
    - (e) none of the above

16. The PRS Concept of an organizational unit, which stands for
    - (a) Public Relations System,
    - (b) Predetermined Realistic Systems,
    - (c) Priorities, Restrictions, Systems,
    - (d) Purposes, Resources, Systems

    concerns the requirements of any organizational unit.

17. "The way educational systems are designed has a significant impact on the quality and quantity of results" refers to
    - (a) a universal definition of system
    - (b) a unique design strategy
    - (c) using models to specify precise conditions for the existing system.
    - (d) programs which involve people
    - (e) all of the above
    - (f) none of the above.

TRUE or FALSE

1. T F If a project team or workshop group encounters a question while working on step one of the design strategy, but feels that they could proceed to the next part without answering it, information should be gathered at this point to answer the question anyway.

2. T F Information gathering occurs only after ideal systems

3. T F When designing a system, as much information as possible should be gathered, even if some of it later turns out to be irrelevant.

4. T F Since one of the eight system elements is defined as "human agents", all the humans involved with a system should therefore be classified as "human agents".

5. T F A physical catalyst is any physical thing that aids in making the conversion of inputs to outputs and is thus incorporated as part of the output.

6. T F The FIST is the system proposed for implementation.

7. T F When designing ideal systems it is best to incorporate exceptions to the normal.

8. T F The purpose of operating and controlling a system is to

make certain that the desired output of product or service is achieved and that the function is accomplished.

9. T F Functional components should always be determined once the function level to be worked at is determined.

10. T F A model should conform to real life but real life does not always conform to the model.

11. T F In a design project, only the design strategy will be used, because it is geared particularly to the problem of design and is therefore more effective.

12. T F A completed system matrix has 40 equally filled squares.

13. T F For every system element, the control dimension of the design matrix should never be specified before the fundamental dimension is specified.

MATCHING

1. ___ Determining the Function
2. ___ Developing the Ideal System
3. ___ Gathering Information
4. ___ Suggesting Alternatives
5. ___ Selecting a Solution
6. ___ Formulating the System
7. ___ Reviewing the System
8. ___ Testing the System
9. ___ Installing the System
10. ___ Measuring and Controlling Performance

Purposes

A. Obtain pertinent data.
B. Evaluate effectiveness and predict system performance
C. Determine the best combination of system components which will comprise the recommended system.
D. Translate the design specifications into an operating system.
E. Determine the mission, aim or purpose of the system.
F. Insure that sufficient information is included in the design matrix for the system to operate properly.
G. Create a system matrix which will be used as a guide for developing the recommended system.
H. Provide sufficient details for making the selected system operative.

I. Gather specialized information to check the costs and abilities of the recommended system.

J. Seek different suggestions for achieving the function of the components that need change.

MORE...

1. ___ Original design
2. ___ Research strategy
3. ___ System matrix
4. ___ IDEAL Concept design strategy
5. ___ Stimulator list
6. ___ Model
7. ___ Operating and Controlling Strategy
8. ___ Function

A. Gives precise conditions for each system element and dimension.
B. The primary concern of the system.
C. To arrive at general laws and theories.
D. Specific prods for developing idal system.
E. State of existing system
F. To find a specific solution for a specific problem
G. Management
H. Zero cost, Zero scrap, 100% utilization of resources.
I. Abstraction of a real life phenomena.
J. State of nonexisting system

Short Answer

1. The FIST is developed for units of _______________ and alternatives
2. are developed to also handle units of ____________________.
3. Goals are usually associated with what dimension? _____________

What is the purpose of expanding all elements?

Consider your interim report as a system:

(a) List at least five possible function statements for this system.

(b) Array these hierarchically and just pick one as your selected level.

(c) Identify limitations for the selected function.

(d) List at least four possible units of regularity

(e) List at least five broad ideal systems for achieving the function.

APPENDIX J

Attendee ______________________ Rater _________________________

Answer in terms of attendee conceptual views rather than form or terminology use.

**		NONE					COMPLETELY	
0	Understanding of "function".	1	2	3	4	5	6	7
0	Understanding of and ability to use function expansion.	1	2	3	4	5	6	7
0	Understanding of and ability to determine limitations & regularities.	1	2	3	4	5	6	7
0	Understanding of broad statements of Ideal systems.	1	2	3	4	5	6	7
0	Understanding of the FIST.	1	2	3	4	5	6	7
0	Understanding of the function of the various steps & techniques involved in the IDEALS Concept.	1	2	3	4	5	6	7
0	Overall understanding of the IDEALS Concept.	1	2	3	4	5	6	7
0	Overall ability to use the IDEALS Concept.	1	2	3	4	5	6	7
0	Ability to utilize the concepts underlying the IDEALS Concept systems.	1	2	3	4	5	6	7
0	Degree to which the interim report reflects any change in the individual's conceptual approach to systems design.	1	2	3	4	5	6	7
0	Understanding of purposeful activities and that different strategies are used for each.	1	2	3	4	5	6	7
0	Ability to integrate specific ideas of outside speakers.	1	2	3	4	5	6	7

* "COMPLETELY" means to the same degree as GN or JTJ.

** UNABLE TO MAKE RATING DUE TO INSUFFICIENT INFORMATION.

NAME______________________

RATER______________________

APPENDIX K

High				Low	
1	2	3	4	5	Person recognizes that a design strategy is needed on less well defined problems requiring a specific solution for a specific circumstance.
1	2	3	4	5	Person has different strategies for different needs (problems)
1	2	3	4	5	Person knows when to use a design strategy
1	2	3	4	5	Person takes a more macro or broad view of problem situations.
1	2	3	4	5	Person sees fewer restrictions and ways to overcome limitations
1	2	3	4	5	Person views self as change agent rather than manager or controller
1	2	3	4	5	Person has balance between general and specific
1	2	3	4	5	Person knows when to be abstract and when to be concrete
1	2	3	4	5	Person works well in groups
1	2	3	4	5	Person has lack of defensiveness
1	2	3	4	5	Person treats others as human agents in problem solving rather than objects to be manipulated
1	2	3	4	5	Person has tendency to look for what is required to solve a problem rather than being inhibited by status-quo concepts.
1	2	3	4	5	Person sees complexity of problems requiring group attention vs. individual expert solution
1	2	3	4	5	Person has ability to concentrate on other's ideas and not on their personalities
1	2	3	4	5	Person does not get so ego involved with a particular solution that he loses sight of the problem or function

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21 September 1972

TO: Participants in OE project on
Training in a New Strategy for Developing
Educational Products and Procedures

FROM: Gerry Nadler

SUBJECT: Two-day Follow-up Session
26 & 27 October

After an initial introduction to the IDEALS Concept, problems often arise when attempts are made to apply the Concept to specific projects. Difficulties are usually in two general areas: (1) understanding the particulars of the IDEALS Concept, and (2) problems and questions that a particular project raises about applying the IDEALS Concept. In the context of the overall project, the purpose of the two and three-day workshops is to try to deal with these difficulties and to develop attendee competence in using the IDEALS Concept. As we see it, this higher level function includes the function chosen for the two-day workshop: to motivate completion of projects.

Based on the F. I. S. T. which the group developed for the two-day workshop, we have formulated a tentative schedule which is enclosed for your suggestions. To facilitate this design further information is required. The purpose of this letter is therefore, to:

(a) acquire a set of general questions concerning your understanding of the IDEALS Concept;
(b) acquire a set of questions concerning difficulties you are now having with your particular project.

Please return your list of questions by Friday, 6 October.

We will be sending you a separate letter concerning the administrative details of the session.

SCHEDULE

Wednesday evening 25 October	Individual Sessions* (scheduled for one hour)
Thursday morning 26 October	Full group review and general problems session Session to deal with questions concerning your understanding of the IDEALS Concept and general problems in its use
Thursday afternoon	Small group question and answer sessions Four groups each with IDEALS resource person - groups set up on similarity of project - session to deal with specific project difficulties
Thursday evening	Individual Sessions*
Friday morning 27 October	Open - Will be used for, full group, small group or individual sessions depending on needs and desires of attendees **
Friday afternoon	Plan three-day workshop
Friday evening	Individual sessions

* If you desire an individual session please note and give at least two times.

** Any ideas on how this time might be best used?

Please respond to the following by writing out specific questions you have. A stimulator list is enclosed to help you generate question areas but the list should not be considered exhaustive. Also please be as specific and concrete as you can.

YOUR QUESTIONS ON DIFFICULTIES WITH YOUR PARTICULAR PROJECT

FOR MORE QUESTIONS USE REVERSE SIDE

In using this stimulator list, we recommend that you follow this procedure: first go down the list thinking about your problems and questions with regard to understanding the IDEALS Concept noting specific problems and questions as you go (you might use the numbers for reference); then go back through the list thinking of the practical problems encountered in your project, again noting specific questions as you go; in either case note problems as you think of them. However the list is only to aid you so if you feel you could best use it some other way, fine.

1 LIMITATIONS

2 GOALS VS. FUNCTIONS

3 INFORMATION CATALYST ELEMENT

4 FUNDAMENTAL (OR PHYSICAL) DIMENSION

5 PRACTICAL USES OF FUNCTION OR SYSTEM PYRAMIDS

6 LIMITATIONS ON PHYSICAL CATALYSTS

7 USES OF ELEMENT EXPANSION

8 BROAD STATEMENTS OF IDEAL SYSTEMS

9 EXPANSION OF INFORMATION CATALYST ELEMENT

10 HOW FUNDAMENTAL DIMENSION USED IN DESIGN

11 SYSTEM PYRAMIDS

12 EXPANSION OF PHYSICAL CATALYST ELEMENT

13 ULTIMATE IDEAL SYSTEMS VS. FEASIBLE IDEAL SYSTEMS

14 PRACTICAL DIFFICULTIES IN DETERMINING BROAD STATEMENTS OF IDEAL SYSTEMS

15 LIMITATIONS ON INFORMATION CATALYST ELEMENT

16 RECOMMENDED SYSTEM

17 FORMULATING DETAILS OF THE SYSTEM (STEP 6)

18 DIFFERENT STRATEGIES FOR DIFFERENT PURPOSEFUL ACTIVITIES

19 PRACTICAL DIFFICULTIES IN SELECTING THE WORKABLE SYSTEM

20 LIMITATIONS ON SEQUENCE ELEMENT

21 MINIMUM LIMITATIONS

22 SYSTEM MATRIX - ELEMENTS AND DIMENSIONS

23 ENVIRONMENT ELEMENT

24 INPUT LIMITATIONS

25 PRACTICAL DETERMINATION OF UNITS OF REGULARITY

26 FUNCTION PYRAMIDS

27 PHYSICAL CATALYSTS

28 TESTING THE SYSTEM OR ITS COMPONENTS (STEP 8)

29 SUGGESTING ALTERNATIVE METHODS FOR INCORPORATING EXCEPTIONS (STEP 4)

30 INFORMATION GATHERING (STEP 3)

31 RECOMMENDED SYSTEM VS. THE FIST

32 PRACTICAL DIFFICULTIES IN FORMULATING DETAILS OF THE SYSTEM

33 INTERFACE DIMENSION

34 SEQUENCE ELEMENT

35 PRACTICAL DIFFICULTIES IN IDENTIFYING FUNCTIONAL COMPONENTS

36 ESTABLISHING PERFORMANCE MEASURES (STEP 10)

37 PRACTICAL USE OF THE SYSTEM MATRIX

38 FUNCTION DETERMINATION (STEP 1)

39 PRACTICAL DIFFICULTIES IN USING LIMITATIONS AND IRREGULARITIES

40 SPECIFICATION OF THE SEQUENCE

41 EXPANSION OF THE ENVIRONMENT ELEMENT

42 PRACTICAL DIFFICULTIES

43 REVIEWING THE SYSTEM DESIGN (STEP 7)

44 PRACTICAL DIFFICULTIES IN SUGGESTING ALTERNATIVES

45 CRITERIA FOR DETERMINING WHAT INFORMATION TO ACQUIRE

46 PRACTICAL DETERMINATION OF THE RECOMMENDED SYSTEM FROM THE FIST

47 FUNCTION ELEMENT

48 HOW INTERFACE DIMENSION USED IN DESIGN

49 EXPANSION OF THE SEQUENCE ELEMENT

50 IDENTIFYING FUNCTIONAL COMPONENTS

51 OUTPUTS VS. THE FUNCTION

52 HOW STATE DIMENSION USED IN DESIGN

53 F I S T (FEASIBLE IDEAL SYSTEM TARGET)

54 INPUTS

55 CRITERIA FOR DETERMINING REGULARITIES AND/OR EXCEPTIONS

56 HUMAN AGENTS ELEMENT

57 PRACTICAL DIFFICULTIES IN DETERMINING OUTPUTS

58 REGULARITIES VS. EXCEPTIONS

59 CONTROL DIMENSION

60 PRACTICAL DIFFICULTIES IN DETERMINING WHAT INFORMATION TO GATHER AND WHEN

61 UNITS OF REGULARITY

62 CRITERIA FOR SELECTING THE FUNCTION LEVEL FOR DESIGN

63 PRACTICAL DETERMINATION OF WHAT IS AND IS NOT A MINIMUM LIMITATION

64 LIMITATIONS ON HUMAN AGENTS ELEMENT

65 OUTPUT LIMITATIONS

66 STATE DIMENSION

67 HOW CONTROL DIMENSION USED IN DESIGN

68 SELECTING A WORKABLE SYSTEM (STEP 5)

69 INPUT EXPANSION

70 EXPANSION OF HUMAN AGENTS ELEMENT

71 OUTPUT EXPANSION

72 CRITERIA FOR SELECTING A WORKABLE SYSTEM FROM STEP 4 ALTERNATIVES

73 INSTALLING THE DESIGNED SYSTEM (STEP 9)

74 LIMITATIONS OF THE ENVIRONMENT ELEMENT

75 OUTPUTS

76 ITERATIVE NATURE OF THE PROCESS

77 ELIMINATION OF THE FUNCTION

78 MEASURES OF EFFECTIVENESS

79 FUNCTION EXPANSION

80 PRACTICAL DETERMINATION AND USE OF MINIMUM LIMITATIONS

81 FUNCTION HIERARCHY

82 CRITERIA FOR SELECTING THE FIST

83 PRACTICAL DIFFICULTIES IN FUNCTION EXPANSION AND SELECTION

84 OTHER PRACTICAL DIFFICULTIES IN APPLYING THE IDEALS CONCEPT

FUNCTIONS, FUNCTION EXPANSION AND GOALS

a) What is the difference between function determination and function expansion?

b) How should the criteria for selecting the function level be determined?

c) How do you proceed after the function expansion has been completed?

d) How can goals be distinguished from functions? Where in the design process should goals be used? How should they be used?

e) There seems to be a natural tendency to list "goals" rather than "functions" when expanding function. What suggestions do you have for: 1) being able to quickly identify statements that are goal-like, 2) converting goal-like statements into functional statements and 3) helping planning groups differentiate between goals and functions?

f) Though I am beginning to sense when the intervals between functions in the expansion are extremely large, do you have some suggestions for identifying this problem when it happens?

g) I notice that I feel most comfortable with the "cuplet" approach to arriving at the system which needs to be designed; that is, does item A depend on the accomplishment of item B or vice versa, and so on down the list until you have one remaining. I recall that Dr. Nadler used a different process. I wonder whether it could be reiterated.

h) It seems that when one begins to think of systems to eliminate the system on which function expansion was done, and the level selected that it is always possible to think of a system to eliminate the system. At least there seem to be "conditions" that if existent would eliminate the system. Though I see the importance of not working on a system unnecessarily, I am not sure that I understand the real intent of eliminating it.

Example: if one were to decide to have a system to plan a curriculum, couldn't it be eliminated by establishing a condition where curriculum wasn't needed at all under some very theoretical conditions? Would this do away with the need for the system in the realistic setting?

i) I understand how to write broad statements of ideal systems; I understand how to proceed to the feasible ideal system target; however, I find it difficult to eliminate the function.

j) I have noticed with the planning groups a decided attitude of impatience in carrying out function expansion, especially to some of the more societal oriented ends and with keeping intervals very small. How can one tactfully deal with this attitude, relying on something more than, "I promise you that it works best this way and it is important that we do it"?

k) Although we spend a great deal of time on function determination and expansion, I am still somewhat underawed by its relevance, at least in the degree of concern and development that we expended on the topic.

HINT:

Some of the above questions might be answered by considering:
What function is accomplished by conducting a function expansion?
or
Why is function expansion used in determining the purpose of the system?

ELEMENTARY EXPANSION

a) Would it be possible to go over the best way to expand the elements, other than function, in order to reduce the restrictions of the limitations? I understand that it is done sequentially, but I seem to have difficulty seeing how getting more operating latitude is actually achieved by pushing the element back to a broader base.

b) How do you know if you have included enough for the input expansion? Where should you impose limits on the expansion of the input items?

c) What should I be searching for when I work on element expansion?

MINIMUM LIMITATIONS AND REGULARITIES

a) In considering possible limitations to the systems, it has been convenient to try to list items applicable to each of the system elements. Having listed them, we then consider whether they represent a limitation and usually are able to rule out most of what was included on the brainstorming list. Is there a better way of identifying "real limitations"? It seems that my groups have been upset by erasing all their hard work.

b) What techniques can be used for practical determination of of what is and is not a minimum limitation?

c) I am having some difficulty in the application of limitations and regularities as I design my projects.

d) I have done some of the work using the elements and limitations; but this confuses me somewhat so that I do not know what to do with this aspect of the IDEALS Concept once I have gathered the information.

e) What techniques can be used in practical determination of Units of Regularity?

f) I have been unable to persuade my planning groups that it is necessary to plan "ideal" systems for the regularities only, especially when items from the input element have been identified as limitations and these in turn have been clarified as to units of regularity. Am I confused with the way the process should work? At what Step of the strategy do you actually begin to plan for the irregularities?

g) What is the difference between limitations and regularities?

h) How are cost analysis factors included? This still is rather unclear.

HINT:
Some of the above questions might be answered by considering: Why should attempts be made to determine the minimum limitations for each element? What function is accomplished by trying to design for only minimum limitations?

ULTIMATE VS. FEASIBLE BROAD STATEMENTS OF IDEAL SYSTEMS

a) What is the difference between feasible and ultimate ideal systems?

b) How can broad statements of alternate plans be developed without much information input and/or specialized assistance? How does one develop enough alternative possibilities?

c) In getting planners to come up with new ideas for systems that can later be separated into ultimate and ideal categories, it is hard to get them to accept a need to think of ultimate because they cannot see the need to think about things that are ruled out by technology. If they are working on a system to be applied to the here and now, and know that it is a one-time event (such as a meeting), is it necessary to have them think "[illegible]ate" as well as "ideal"?

d) Is it necessary to try to think of an ultimate system each time one is working or can we go right to broad statements of ideal systems and FIST even though none of the broad statements indicate an ultimate system?

e) I have worked on many systems that I want to design into projects, however, I need to learn how to develop models.

HINT:

Some of the above questions might be answered by considering: What function is accomplished by dividing broad statements of ideal systems into ultimate and feasible? Why are ideal systems divided into ultimate and feasible?

THE F I S T AND THE RECOMMENDED SYSTEM

a) How do I proceed after I have determined the F I S T?

b) What is the value of the F I S T?

c) What is the difference between the FIST and the recommended system? They seem about the same.

d) What techniques can be used for practical determination of the recommended system from the FIST?

e) How is the recommended system derived from the FIST?

f) Practical difficulties in selecting a workable system also is significant.

TEST QUESTION WHICH MOST DID NOT ANSWER CORRECTLY

3 The feasible ideal system target should be selected for:
 X (a) Regularity or ideal conditions only.
 (b) All the conditions the proposed system will include.
 (c) Most of the conditions the proposed system will include.
 (d) the real-life conditions of the proposed system.
 (e) none of the above.

6 T F The FIST is the system proposed for implementation.

FORMULATING, TESTING AND INSTALLING THE DESIGNED SYSTEM

a) What techniques can be used for formulating details of the system?

b) How can practical difficulties in formulating details of the system be overcome?

c) How do I formulate details of the system?

d) Once we have selected the workable system how do we develop the objectives for a specific project?

e) What are some techniques for installing the designed system?

f) How do we test a system (e.g. career education)? This is difficult for me to understand completely.

g) What techniques can be used for testing the system or its components?

h) How can testing the system be done adequately before initiating a new curriculum when a school operates on a fixed time schedule and a fixed budget?

i) What is the difference between broad statements of ideal systems and testing the system?

HINT:

Some of the above questions might be answered by considering: What function is accomplished by many broad statements of ideal systems? What function is accomplished or what is the purpose in testing the system?

GROUP PROCESSES AND PROBLEMS ARISING IN INTERACTION WITH OTHER PEOPLE

a) It seems that a truly democratic low pressure way of revising a curriculum takes a heap of time. How do you go about expediting things? How do you work through the first couple of steps in the IDEALS Concept in a short committee meeting so that one person will have enough definite ideas to proceed from there?

b) After presenting an oral report on the IDEAL "Student Registration" system, (one phase of my project) and the method(s) used to create the ideal system, no further thought was given to this system; and, an off-the-cuff decision was made for the student registration system to be used next term. What do I do now?

c) What methods can be used to formulate group responses to particular questions (other than Delbecq's)?

d) How can the IDEALS Concept be used when very little time is available for participants?

e) How does one overcome the tendency of the group to return to a problem orientation and the research strategy?

f) How does one overcome the problem of a lack of alternative suggestions? What do you do when these still reflect traditional ways of thinking?

g) How does one convince people that it is best not to go visiting to find out what others are doing? How does one show people that such a simple concept is really worthwhile?

HINT:
Might be answered by considering where the IDEALS Concept places the task of information gathering in relation to other activities in systems design.

h) How do I get students to think creatively?

i) How can one overcome the bias inherent in "vested interests" through the use of IDEALS Concepts?

j) What do you do when you get the feeling that you are repeating too much or going around in circles?

k) How do you present the idea to others so as to decrease their defensiveness and increase acceptance?

l) How do you re-cycle and keep going if none of the ideas coming from the group seem at all innovative?

m) My main problem is time. With from thirty-five to forty in each class, how do I teach the IDEALS Concept quickly enough to do any good?

n) How can the process be streamlined and still get effective results?

o) In formulating the responsibilities of proposed functional groups, what part should be given to the members of these groups?

p) How do you incorporate the IDEALS Concept (after repeated attempts) within an autocratic administration unwilling and, in some cases, unable to change?

q) Can man really be changed from rather throughly established habits?

SYSTEM DIMENSIONS

a) How are the state, rate, control, and interface dimensions used in the matrix when using parallel systems and subsystems?

b) After working with the dimensions of the various elements I find that "control" is the most difficult to understand. This may be because I am confused by it. There are so many aspects to control, and if one reads the chapter on control models, it is still not clear which aspects might be most crucial. Is there a way of deciding this?

c) What is the influence of state, and control and interface dimensions practically at the level of the selection of the workable system?

d) The most difficult element for me to identify dimension specifications is sequence. Sequence seems simple enough to understand operationally or in dictionary sense, but I am not sure I understand what it means when it does not exist in such a "cut and dried" arrangement. For example, a day of in-service where twenty activities can be scheduled at various times.

e) How are the rate and control dimensions used? When I think through the chart to see if I am forgetting something, I find myself unsure about some rate specifications. If a tutor is listed as a human agent, what kind of rate dimensions statement would I use? How do physical catalysts fit with the rate dimension?

f) How is the Interface Dimensions used in design?

FUNCTION AND SYSTEM PYRAMIDS; THE SYSTEM MATRIX AND PARALLEL SYSTEMS

a) What are the practival uses of function or systems pyramids?

b) When the system design requires the use of parallel systems, how does one tie the parts together with respect to the function and original system matrix?

c) I never really saw, other than on a theoritical plane, the use of the systems matrix in the application of system development. How is this matrix actually, rather than theoritically, used in systems design?

Appendix N

Name ____________________________

ATTENDEE ACTIVITY CHECKLIST

Please use the following checklist to describe your activities between the end of the three-week session and now. Try to include any of your observations or feelings on the IDEALS Concept in terms of its use in real-life situations as opposed to classroom use you had before you left.

What protions of the IDEALS Concept have you been using?

1) the overall philosophy ______
2) purposeful activities ______
3) limitations ______
4) regularities ______
5) design matrix ______
6) dimensions in matrix ______
7) group processes ______ which ones ______

Of these (or other) portions which have been (give the number)

1) most useful ______
2) least useful ______

Comments:

In what way have you been using the IDEALS Concept?

1) meetings/committees ______ number of times ______
2) presentations ______ ______
3) discussions ______ ______
4) personal ways ______ ______
5) non-work related projects ______ ______
explain:

6) projects other than required for this program ______ ______

Comments:

Have you given out any materials
related to the IDEALS Concept? ________ number of times ____
what materials:

Would you like more materials yes _______ no ________
which ones:

To whom have you talked about or worked with using the IDEALS Concept?

1) Co-workers _______
2) superiors _______
3) groups/people you are responsible for _______
4) non-work related groups/people _______
5) professional groups _______

Comments:

What has been the reaction to your use of the IDEALS Concept with other gorups/people

positive _____ neutral _____ negative _____

explain giving specific reactions:

Have other groups/people used the IDEALS Concept

with your help ____ number of times ______
without your help ______ ______

In what ways have others used the IDEALS Concept that you knos of:

APPENDIX O

REPORT ON 3-DAY CONFERENCE DESIGN

TIME 1

Dec 71

O E proposal set forth

Function: To Develop Human Agents for System Design

(1) to prepare educational professionals for the role of utilizing the IDEALS Concept in educational curriculum and program development

(2) to educate professionals involved to the point where they can educate others in their own organizations to carry out the ideas

(3) to produce materials and procedures which will permit others to implement the same program in educational organizations

Part of Overall Design included a 3-day follow-up conference as a sequence item

Functions for 3-day

At this stage we had a very rough F I S T - but then not much detail was needed.

Limitations: 3 days in Madison
Jan 10, 1973

To be fully designed at 3-week workshop.

TIME 2

August 72

- Design of 3-day changed to take place at 2-day
- LIMITATION OF MADISON QUESTIONED POSSIBLE ALTERNATIVES N. O. or L. A.

FUNCTION - DESIGN EDUCATION SYSTEMS

	LIMITATIONS	REGULARITIES
Inputs	1. "project personnel	Us
	2. attendee projects	written copies
Output	None	
Sequence	3 days in February	9-5:00
Environment	New Orleans	Weather (cool and wet)
		downtown
Physical Catalyst	None	
Human Agents	None	
Information Catalyst	None	

IDEAL SYSTEMS

1) De school society
2) Utilize available information
3) Have consultants to design systems
4) Design education pill
5) Share constructive experiences in groups(large,small, individual)
6) Review report via individual presentations
7) Have small groups plan completion and follow-up on projects
8) Have "stroking" or reinforcement sessions
9) Review IDEAL Concepts
10) Design a system to develop criteria to know when IC should be used.
11) Bring key personnel with us to share experience
12) Design educational improvement program for each insitution
13) Review report and assist in improving final reports
14) Have "incidental experience session" and transcribe it.
15) Bring list of "incidental" experineces with you
16) Match people in groups with exputs (multi-talented)
17) Provide interaction with O E people
18) Discuss possibilities or publications
19) Plan activities for control groups
20) Cooperative project design work in small groups
21) Promote dissemination projects
22) Design a mechanism for continual follow-up
23) Have "production-line" activities to practice basic ideas
24) Provide each attendee with profile of other attendees
25) Have pre-course (3-day) evaluation of projects by staff
26) Have "role playing" sessions with attendees
27) Video-tape the conference
28) Have video's of other design sessions
29) Evaluate projects by completeing questionnaire
30) Emphasis on good project results
31) Work on a project from start to finish - time control
(circulate a questionnaire to gain common project)

FUNCTION EXPANSION

a) To review, refresh, revise I C for participant

b) To reinforce

c) To provide self-confidence, capability and proficiences

d) To apply I C to your educational system

e) To provide education systems improvement programs for each institution

f) To design projects

* g) Design educational systems

h) Change educational systems

i) Provide eudcation

j) Have students learn

FUNCTIONS

a) To design I C workshop for educators

b) To determine desireability of one year follow-up

c) To learn about projects of participants

d) To learn about incidental experiences

e) To exchange individual projects

f) To determine subsequent goals for individuals

g) To design education systems design and improvement program for each institution

h) To provide assistance for improving individual projects

i) To provide interaction with OE (NIE) decision makers

j) To determine sources of publication of activities

k) To determine conferences where I C reports can be given

l) To provide motivation for participants

m) To determine areas of education where I C should be used

n) To establish criteria to determine when I C should be used

o) To expose others in participants' organizations to I C

p) To determine role of comparison group

q) To develop system design capabilities instrument

r) To enjoy systems design activities

s) To review, refresh and revise I C for participants

t) To evaluate project

u) To arrange continuing follow-up on projects and related topics with this group

v) To illustrate actual design project under way

TIME 3 Sept - Oct 72 Information gathered on possibility of change from OE - OKAYED Information gathered on possible locations Bruce N. O. Martin L. A.	
TIME 4 Oct. 2-day session Design of 3-day session Date of conference changed Selection of New Orleans - roughed out 3 choices with B. Meeks	Did full function expansion and got Broad Statements of IDEALS Systems Here the selected function was higher than original - but still in line with proposal

TIME 5 Nov. - Beginning of detailed work - Jim T & Jim S went over IDEAL Systems proposed and functions - Also included our functions on evaluation and those from original proposal	Here we tried to get a feel for the possible alternative 3-day sessions. Rejected some as ultimate Place priorities on others (e.g.) low on video taping sessions. Modified some suggestions Instead of outside consultants have attendees act as consultants
TIME 6 Dec. - More detail - SET UP CATEGORIES OF ACTIVITIES for 3-day - Also set up rough sequence of activities for 3-day and a rough purpose - Session types Report Experience Small Group Wrap-up - Added Idea - that atterdees run the 3-day and we (the staff) act basically as observers.	Discussed possible activities based on our observations of what worked or did not work in 2-day Also looked at what we felt would be most useful always keeping in mind the various functions

IME 7 Dec. Meeting with Gerry hecked our design of 3-day to see how t matched with ideas generated at -day oughed out a description of each ession and decided to gather informa- ion by letter	Again at each stage we moved towards being more specific - but always trying to keep the general (higher functions) in view. Have regularities of 4 main session types but allowed for exceptions (a) review tape (b) OE people (c) extra people
IME 8 Dec-Jan More Detail on a) evaluation- needed information for our OE report - worked on ways to obtain it. b) Detailed schedule for 3-day - who would do what and when rough out small groups and choose people for sessions. c) Arrangements with hotels for rooms, equipment, etc.	At this stage have mainly a recommended system - Decided what we wanted - evaluation criteria How to obtain it. through combination of questionnaire and interview use information from letter to work out more details

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MEMORANDUM

TO: Participants in Education Systems Design Training Program

DATE: December 4, 1972

FROM: Gerry Nadler

SUBJECT: Three-Day Conference in New Orleans

This letter describes the planned activities for our three-day conference on February 7, 8, 9 in New Orleans.

We need the written report of your project by February 1, 1973 so we may do the duplicating in Madison. Individual sessions with Jim Johnston or me will still be available at the three-day session to provide you with feedback on your project.

The report should include the final design and the chronology of steps taken in arriving at the final design. (Emphasis should be on what you did - in the order you did it. Also include any modifications you made in the IDEALS Concept.)

Enclosed is a tentative schedule of events for the three-day conference. There will be four basic types of sessions:

1 Project Report Sessions
2 Small Group Design Sessions
3 Incidental Experience Report Sessions
4 Critique/wrap-up session

We expect you, the participants, to run these sessions. To accomplish this, we need volunteers for giving reports and experiences, for group leaders, and to chair the wrap-up. Please return enclosed choice list by December 11, 1972.

If you think it may be helpful, you may bring one or two key personnel from your organization with you to the conference. These should be people who are familiar with the IDEALS Concept in enough detail so that they can contribute to and learn from the conference. They will have to make their own reservations and pay their own expenses. In order for us to make plans concerning how these people might be incorporated into the session plans, please indicate on the attached sheet information concerning them.

The following arrangements have been made in New Orleans. We will be staying at the Fontinebleau Motor Hotel, 4040 Tulane Avenue, Telephone 486-6111. The prices are singles $14.00 per room per day and twins at $18.00 per room per day. The project will pay the single rate per attendee plus $10.00 per day (3 days) for meals; no group meals will be arranged. We will have checks for meals in New Orleans but we will mail out travel expense checks only after returning to Madison. Please indicate on the choice list what type of room you want and how many nights you plan to stay. We will be sending out more information later.

TENTATIVE THREE-DAY WORKSHOP SCHEDULE

WEDNESDAY
Morning Project Report Session

Description: Several attendees (probably 3-4) will be asked to give a report (1/2-3/4 hr. each) on their specific project. Emphasis should be on what was actually involved in the step by step, chronological activities that were carried out in completing the project.

OE Interaction - Several people from OE will be invited to attend the first two days of the workshop. They will possibly make a presentation and time will be set aside for a group discussion with them.

WEDNESDAY AFTERNOON
& THURSDAY MORNING
Small Group Design Session

Description: You will be divided into small groups (5-6 people) and will design a particular system. A leader will be chosen for each group to direct the design.

There will be a time limit for the design at the end of which the groups will be expected to have a reasonably complete system design. (i.e. Some detailing of the actual system will be expected).

The following are possible topics - please indicate your first and second choice or describe any other system you might be interested in designing. We will make assignments to groups based on your choice.

TOPICS

a. Design of a dissemination system
This would involve designing a system for disseminating IC materials and/or the results of this project to educational professionals not involved with the current project. A reasonably complete design might include: what materials should be used, what training method(s) (if any) to use, who should the dissemination effort be directed towards and what criteria might be used for selecting them, how the dissemination should be carried out, and so forth. The resulting design should be reasonably specific (i.e. further along than just specifying a FIST)

b. Design of a follow-up system
This would involve designing a follow-up program for the present project members regarding their continued use of IC in educational programs. The system should

begin with the termination of the February conference and assume a knowledge and skill level for the group at that time regarding IC. It might or might not include bringing in other people in the education field who might benefit from exposure to IC.

c. Design of an IC program for a particular organization. This would involve the design of an IC program for the group leader's organization with the other group members acting as consultants in the design. The emphasis would be on coming up with a design which the group leader could actually refine for implementation. This design should be more than just an academic exercise.

d. A "Complete run-through" Design
For attendees who have asked to see the complete design process, this would involve the complete design of a simple system completing all the steps in the design strategy. The system to be designed would of necessity have to be very simple in order to complete the design in the time available and with the limited information available. For example, the design might be for the "Evening Entertainment System for February 8" and the final design would be a detailed system (e.g. who would call the taxis at what time). The group members would gather information as necessary to complete the design. Any ideas concerning what system should be designed?

WEDNESDAY
LATE AFTERNOON

After the afternoon session a videotape of Bill Gephart interviewing Gerry Nadler about the IDEALS Concept will be available for review purposes if enough attendees are interested. The tape is one and a half hours long and was prepared for Education R & D professors at a Phi Delta Kappa conference. The tape could be made available for attendee training purposes in their own organizations.

THURSDAY
AFTERNOON
Incidental Experience Session

Description: Several attendees (5-6) will be asked to make a 1/4-1/2 hr. report each concerning their incidental experiences in using the IDEALS Concept. Emphasis should be placed on the reactions of people to IC
non-standard (project) use of IC
special problems that arose in using IC
insights and/or techniques for dealing with problems

FRIDAY
MORNING
Small Group Report Session -

Description - Each group will give a brief report on the system they designed. The staff will give a brief evaluation of each group. An open discussion will follow.

AFTERNOON

Wrap-Up Session

Each attendee will be asked to give a brief (5-8 min) statement concerning the IDEALS Concept, its techniques, its philosophy, its uses or applications; and about the OE project, its methods, its content, etc.

We expect both positive and negative comments and these would be most helpful if they are as specific in nature as possible. A discussion of the points raised will follow. The session will be chaired by one of the attendees.

Please return by
11 December 1972

Name ______________________________

1. I would be interested in giving a project report. ( ) yes ( ) no
   Anticipated Project Topic or Title ______________________________

2. I would be interested in relating some of my experiences regarding the use of the IDEALS Concept. ( ) yes ( ) no

3. Rank order of my preferences as to which design group I would like to be in:

   _____a. Dissemination System
   _____b. Follow-up System
   _____c. IC Program for a particular organization. Yours?_____
   _____d. "Complete run-through" Design. Any topic suggestions? (Write below)
   _____e. Other (specify below in some detail)

   I would be interested in being group leader for the following group(s):

   (a), (b), (c), (d), (e)

5. I would be interested in seeing the video tape concerning the interview on Wednesday after the afternoon session. ( ) yes ( ) no

6. I plan to bring the following members of my organization to the conference:

Name	Position	How did you get him(her) to know about IC?	Where might he(she) contribute to the conference

7. Room preference: single ( ) double ( )

   I plan to arrive on ______________ and depart on ______________.
   time ______________ ______________.

8. Comments concerning any of the above, the session plan, etc.

APPENDIX Q

DIRECTIONS: You should rate all people (including yourself) in your group on the eight degree questions. For each person randomly choose one column and enter your ratings for that person in the chosen column. When you finish you should have eight numbers in a given column for each person in your group.

SCALE: (1 2 3 4 5 6 7)
Low Degree — Medium Degree — High Degree

MATRIX RATING

1) Degree to which the person has an understanding of IDEALS Concept										
2) Degree to which the person takes a more macro view (emphasizes higher level functions) of problem situations.										
3) Degree to which the person sees fewer restrictions and sees ways to overcome limitations.										
4) Degree to which the person knows when to be general and when to be specific										
5) Degree to which the person has a lack of defensiveness (High Degree = Lack of Defensiveness)										
6) Degree to which the person has the ability to concentrate on other's ideas and not on their personalities.										
7) Degree to which the person treats others as human agents in problem solving rather than as objects to be manipulated										
8) Degree to which the person does not get so ego involved with a particular solution or limitation that he/she loses sight of the problem or function (High Degree= not ego involved)										

NAME ______________________________

QUESTIONNAIRE

Please answer all quesitons on this questionnaire; do not leave any blanks. If you do not know the answer please write "I do not know" or "I do not understand" or something comparable. Remember this questionnaire has the purpose of helping us evaluate our project and is not to be used in grading or evaluating you as an individual. This questionnaire has three parts: I. Questions on the IDEALS Concepts; II. Questions on your completed design project; III. Questions on your activities other than a completed project where you used the IDEALS Concepts.

I. Questions on the IDEALS Concepts:

1. List and define the parts of the design matrix

   a. system elements-

   b. system dimensions-

2. What is the value in considering a system in design matrix terms, i. e. in terms of the elements and dimensions? What is the purpose of using a design matrix?

3. Why is it important to consider the function of a system to be designed?

4. What is meant by function expansion?

5. Why is it important to do a function expansion?

6. What is meant by function hierarchy?

7. Why is it important to consider the hierarchy of functions involved with a system?

8. Define each of the following types of systems and state the differences between them (i. e. the relationship between them):

   a. Ultimate ideal system -

   b. Feasible ideal system -

   c. F I S T (target system) -

   d. Recommended system -

9. What is the purpose for considering each of the following types of systems:

   a. Ultimate ideal system -

   b. Feasible ideal system -

   c. F I S T (target system) -

   d. Recommended system -

10. What is meant by regularities?

11. Why is it important to consider the regularities in system design?

12. What is meant by minimum limitations?

13. Why are minimum limitations important?

14. What distinguishes conventional design strategies from the IDEALS strategy?

15. What purpose is served by having groups (rather than a single individual) work on the design of a system?

APPENDIX S

II. Questions on your completed design project(s)

1. How many design projects have you completed using the IDEALS Concept? ______.

   How many other projects have you completed since August, 1973? ______.

2. Please briefly describe the project(s) on which you used IDEALS:

   a.

   b.

   c.

   d.

   e.

3. Do you feel your completed project(s) produced results which are
   better ______ the same ______. worse ______
   than would have been obtained prior to your knowing about IDEALS Concepts?

4. Here is a check-list of IDEALS Concepts techniques. Which ones did you use in completing your project(s)?

   a. the overall philosophy ____
   b. minimum limitations ____
   c. regularities ____
   d. the design matrix ____
   e. system dimensions ____ which ones ______________________
   f. function expansion ____ ______________________
   g. element expansion ____
   h. system elements ____ which ones ______________________
   i. the decision matrix ____ ______________________
   j. group processes ____ which ones ______________________.
   k. the operator matrix ____ ______________________
   l. stimulator lists ____
   m. types of systems
      ultimate ideal ____
      feasible ideal ____
      F I S T ____
      Recommended ____
   n. other (state)
      ____

5. How did you use the above techniques?

III. Questions on your activities other than a completed design project in which you have used the IDEALS Concepts.

1. Here is the check-list again; please check those techniques you have used other than on your project(s):

   a. the overall philosophy ____
   b. minimum limitations ____
   c. regularities ____
   d. the design matrix ____
   e. system dimensions ____ which ones ________________________
   f. function expansion ____ ________________________
   g. element expansion ____
   h. system elements ____ which ones ________________________
   i. decision matrix ____ ________________________
   j. group processes ____ which ones ________________________
   k. the operator matrix ____ ________________________
   l. stimulator lists ____
   m. types of systems
      ultimate ideal ____
      feasible ideal ____
      F I S T ____
      Recommended ____
   n. other (state)
      ____________ ____
      ____________ ____
      ____________ ____

2. How have you used them (please check)?

	used	# of times
a. meetings/committees	____	____________
b. presentations	____	____________
c. discussions	____	____________
d. non-work related projects ---explain briefly	____	____________
e. Personal ways Explain briefly	____	____________
f. Other (explain briefly)	____	____________

3. To whom have you talked with or worked with using the IDEALS Concept? (please check)

a. co-workers	____	____
b. superiors	____	____
c. groups/people you are responsible for	____	____
d. non-work related groups/people	____	____
e. professional groups	____	____
f. other (please state)		
____		____
____		____
____		____

Comments:

4. Of the people you talked to, what per cent of the reactions to the IDEALS Concept were

a. positive (interested and wanted to know more) ____

b. neutral (potential interest indicated) ____

c. negative (not interested) ____

5. Were they receptive to any particular part(s) more than others? (please check) What were their reactions to the following part(s):

	THOUGHT USEFUL	THOUGHT NOT USEFUL
a. the overall philosophy	____	____
b. minimum limitations	____	____
c. regularities	____	____
d. the design matrix	____	____
e. system dimensions	____	____
which ones ____	____	____
____	____	____
____	____	____
f. function expansion	____	____
g. element expansion	____	____
h. system elements	____	____
which ones ____	____	____
____	____	____
____	____	____
i. the decision matrix	____	____
j. group processes	____	____
which ones ____	____	____
____	____	____
____	____	____

k. the operator matrix	________	________
l. stimulator lists	________	________
m. types of systems		
ultimate ideal	________	________
feasible ideal	________	________
F I S T	________	________
Recommended	________	________
n. other (state)		
______________	________	________
______________	________	________
______________	________	________

6. Have you given out any materials related to the IDEALS Concept? _____ No. of times _____
   What materials?

7. Would you like more materials? yes___ no___
   Which ones?

INTERVIEW QUESTIONS

INTRODUCTION: The basic purpose of this interview is to enable us (the staff) to evaluate how effective or ineffective our project has been. We set out originally to do two things, (1) to teach you the IDEALS Concepts and (2) to help you apply those concepts in the form of a specific project. Now we would like to determine your impressions of whether or not we've been successful.

I am going to ask you a series of questions about IDEALS Concepts, your particular project or projects, about your activities during this project and your attitudes towards this project and want you to briefly respond to each - This interview should last about 30 minutes. Please remember we are interested in evaluating our project and not grading or evaluating you as an individual.

A. First fill in any holes from questionnaire and have them explain or elaborate on their answers
Obtain elaboration on the following questions:

Part II question 1 Why didn't you use IDEALS on these projects?

Part II question 3 Why do you think this way? Especially for answers of "the same" or "worse")

Part II question 4 (1) Why these particular ones?

(2) Any particular reasons why the others were not used?

(3) If "overall philosophy" checked find out what they mean by this

Part III question 2 (1) Why these?

(2) Expansion on discussion (primarily for those who do not give talks on experiences)

(3) Brief explanation of how used items (a), (b), and (c)

Part III question 3 same as III, 2

B. How are the above concepts put together in a strategy for deisgn? What is an appropriate sequence of activities for design?

What are the steps and what is involved in each

(1) Function Determination
(2) Develop IDEAL Systems
(3) Recommend an IDEAL System
(4) Implement the System

Why is this sequence important (What is the purpose of these sets of steps?)

Describe any ways in which you feel that you think or act differently as a result of being in this project. What ways? Why?

Do you see a broad or narrow potential application for IDEALS Concepts Why?

Do you see yourself as having been involved (a lot, medium, little) in the IDEALS Concepts during the last six months? Why - or why not?

Possible reasons:

The IDEALS Concepts
This course
Your own work requirements
Your own personal needs
Other -